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OWNERSHIP STRUCTURE, GOALS, AND PERFORMANCE
MEASURES IN CEO COMPENSATION CONTRACTS

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Ola Marie Smith

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Ph.D.

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**OWNERSHIP STRUCTURE, GOALS, AND PERFORMANCE
MEASURES IN CEO COMPENSATION CONTRACTS**

By

Ola Marie Smith

A DISSERTATION

**Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of**

DOCTOR OF PHILOSOPHY

Department of Accounting and Information Systems

2003

ABSTRACT

OWNERSHIP STRUCTURE, GOALS, AND PERFORMANCE MEASURES IN CEO COMPENSATION CONTRACTS

By

Ola Marie Smith

The design of CEO compensation contracts is an important topic for management accounting because it is frequently based on accounting-related performance measures. This dissertation provides new evidence on this important topic. This dissertation develops hypotheses based on agency theory, on the relations between ownership structure, publicly stated goals, and the weight on performance measures in CEO compensation contracts. The first four hypotheses are tested with archival data. All four test results are consistent with predictions and indicate that ownership of hospitals is related to their publicly stated goals. The last three hypotheses are tested with survey and archival data. One of three test results is consistent with predictions and indicates that hospitals' publicly stated financial goals are related to the weight on financial performance measures in hospital CEO compensation.

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TABLE OF CONTENTS

LIST OF TABLES AND FIGURE	vi
CHAPTER 1	
INTRODUCTION.....	1
CHAPTER 2	
LITERATURE REVIEW AND HYPOTHESES	4
Hospital Ownership Structure and Publicly Stated Goals.....	6
Performance Measures and Hospital CEO Compensation.....	13
CHAPTER 3	
RESEARCH METHOD AND RESULTS	21
Sample Selection and Statistics	21
Survey Data.....	22
Archival Data.....	23
Variables.....	23
Contingency Analyses and Estimation Model	27
Hypothesis Tests.....	41
CHAPTER 4	
SUMMARY AND CONCLUSION	49
Summary of Hypotheses and Results.....	49
Contributions.....	51
Limitations.....	52
Future Research.....	53
Conclusion.....	53
APPENDIX A	
SURVEY INSTRUMENT	55
APPENDIX B	
EXAMPLES OF STATEMENTS USED FOR HOSPITAL GOALS.....	57
BIBLIOGRAPHY	58

LIST OF TABLES AND FIGURE

Table 1: Number Of Survey Respondents.....	22
Table 2. Distribution Of Goals Among Ownership Structures.....	32
Table 3: Distribution Of The Performance Measures Among Ownership Structures	34
Table 4: Descriptive Statistics -- All Respondents	36
Table 5: Descriptive Statistics – Early Respondents	38
Table 6: Descriptive Statistics – Late Respondents.....	39
Table 7: Descriptive Statistics - Nonrespondents.....	40
Table 8: Ownership Structure And Goals.....	42
Table 9: Summary Statistics From Seemingly Unrelated Regressions.....	46
FIGURE 1: Theoretical Model.....	5

CHAPTER 1

INTRODUCTION

This dissertation provides evidence on relations between ownership structure, organizations' publicly stated goals, and the weight on performance measures in CEO compensation contracts. The relation between ownership structure, publicly stated goals, and performance measurement and incentives has important implications for the design of management accounting. The design of management accounting practices requires understanding of how ownership structures and goals affect management accounting practices, and why management accounting varies across organizations. This dissertation hypothesizes that ownership structure is a determinant of publicly stated organizational goals, which in turn are a determinant of the weight on performance measures in CEO compensation contracts.

This dissertation uses a variety of literature to support the hypothesis that organizations with different ownership structures have different publicly stated goals. Much of this research investigates the hospital industry, where organizations that perform similar services have different ownership structures. Specifically, previous research provides evidence that performance monitoring and performance-based bonuses are used as motivational mechanisms in hospitals, and that their use varies with ownership structure (Lambert and Larcker 1995). Types of hospital ownership include

for-profit, as well as church, government and other not-for-profit. This dissertation will use this variation in ownership structure to examine differences in publicly stated goals across hospitals, and the effect that these differences have on the weight on performance measures in hospital CEO compensation contracts.

While evidence suggests that ownership is a determinant of goals, goals do vary within types of ownership structures (Arrington and Haddock 1990; Thorpe et al. 1999; Hoerger 1991; Eldenburg et al. 2000). If publicly stated goals are consistent with actual goals, then they should be more accurate predictors of the weight on performance measures used in CEO compensation than ownership structure alone. Therefore, this dissertation examines publicly stated goals as an intervening variable between ownership structure and the weight on performance measures in CEO compensation contracts.

This dissertation uses two research methods: First, archival data are used to identify characteristics of the hospitals, including their publicly stated goals. Second, survey data collected from hospitals are used to estimate the weight placed on performance measures in hospital CEO contracts. Results from a sample of 96 California hospitals are presented. Empirical tests support all of the four hypotheses that ownership structure is related to the publicly stated goals of hospitals, but only support one of the three hypotheses that publicly stated goals are related to the weight on performance measures in CEO contracts.

Previous research examines whether various organizational characteristics are associated with the weight on performance measures in CEO compensation, including

ownership structures of hospitals (Lambert and Larcker 1995; Bushman et al. 1996; Ittner et al. 1997). However, the relation between publicly stated goals and the weight on performance measures in CEO contracts has not yet been investigated. This dissertation extends previous research by providing evidence on the relations between ownership, publicly stated goals, and performance measures used in CEO compensation. Additionally, this dissertation provides evidence on the extent to which compensation design aligns with the publicly stated goals of hospitals.

The remainder of this dissertation is organized as follows: Chapter II reviews the relevant literature and develops the hypotheses, Chapter III presents the research method and hypothesis-testing results, and Chapter IV presents an analysis and discussion of the results along with suggestions for future research.

CHAPTER 2

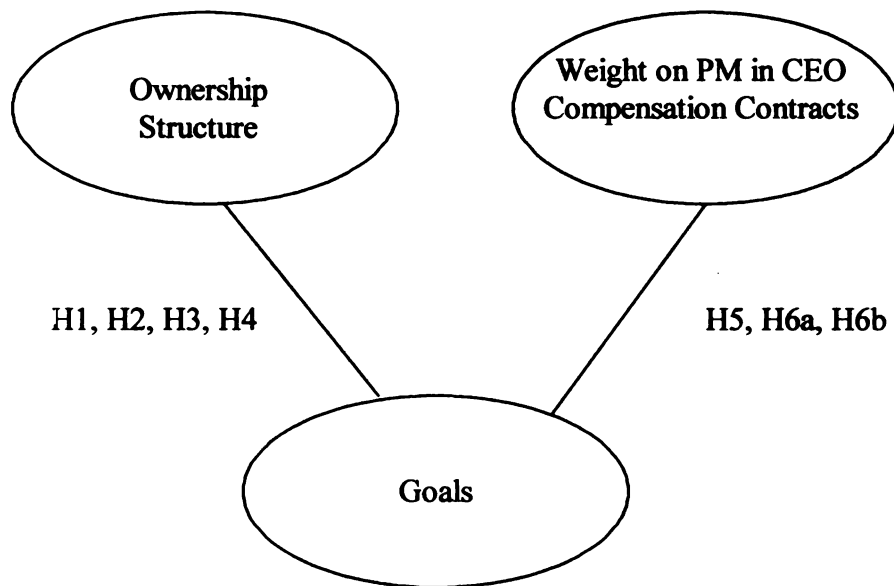
LITERATURE REVIEW AND HYPOTHESES

This chapter presents a review of the relevant literature and develops the hypotheses. First, the literature related to hospital ownership structure and publicly stated goals is presented. Four hypotheses on the association between ownership structure and goals are developed. Then the literature related to the weight on performance measures in CEO compensation contracts is presented. Two hypotheses on the association between the weight on performance measures and publicly stated goals are developed.

Previous research has found that ownership structure affects management accounting practices. Specifically, Lambert and Larcker (1995) investigate the effect of ownership structure on CEO compensation contracts. They examine bonus contracts of hospital administrators after the implementation of prospective payment systems (PPS). They find that hospitals are more likely to experience a decrease in profits with PPS-adopted bonus plans and additional monitoring activities. They also find that for-profit hospitals adopt bonus contracts more often than nonprofit hospitals because profit is substantially affected by managerial effort. They conclude that, consistent with agency theory, hospitals use incentive compensation and monitoring to motivate managers to improve operating efficiency and performance.

This dissertation extends prior research by providing evidence on the relation among different types of ownership structures, publicly stated goals and CEO compensation contracts in hospitals. Figure 1 displays the theoretical model for this dissertation.

Figure 1: Theoretical Model
Relations Among Ownership Structure, Goals and
the Weight on Performance Measures in CEO Contracts



Hospital Ownership Structure and Publicly Stated Goals

Hospitals have different types of ownership structures such as for-profits owned by investors, church nonprofit hospitals owned by religious denominations, government nonprofit hospitals owned by local or state government units, and nongovernment not-for-profits owned by community or philanthropic organizations (American Hospital Association 2000). Although the hospital industry is made up of both nonprofit and for-profit organizations, the majority of hospitals are nonprofit (Salamon 1999). According to Arrow (1963), nonprofit health care organizations are social institutions that help society obtain desired goals by nonmarket means.

Nonprofit health care organizations provide public goods—such as care for the indigent, medical education and community outreach—not provided by the government (Frank and Salkever 1994). Consistent with this, Pauly (1987) views the nonprofit organizational form as a taxation mechanism, where organizational profits are paid out in the form of in-kind benefits. The government delegates decisions about the specific collective goods to be supplied to nonprofit health care providers. These observations suggest that a primary goal of nonprofit hospitals is to provide health care services for the public that would not otherwise be provided by for-profit organizations.

Empirical evidence indicates that nonprofits provide health care services not provided by for-profits. For example, Arrington and Haddock (1990) show that relative to for-profits, nonprofit hospitals provide more social benefits: they are more

responsive to the community they serve, allow patients greater access to medical services, care for sicker patients, and are more involved in community education. Consistently, Thorpe et al. (1999) and Ferris and Grady (1999) find that uncompensated care levels decline when nonprofit hospitals convert to for-profit status. Norton and Staiger (1994) report a negative relation between for-profit hospitals and the volume of charity care, because these hospitals choose to locate in areas with a lower volume of uninsured patients. Collectively, these studies provide analyses and evidence that nonprofit hospitals place a relatively greater emphasis on social and community benefits, and for-profit hospitals place a relatively greater emphasis on profits. This suggests that nonprofit hospitals have different publicly stated goals than for-profit hospitals.¹

Eldenburg et al. (2000) speculate, based on their indirectly related empirical evidence, that hospitals of different ownership structures are likely to have different publicly stated goals. They find that size and composition of the boards of California hospitals vary by ownership structure. For example, not-for-profit and church hospitals tend to have significantly larger boards than government and for-profit hospitals. In addition, the boards of for-profit hospitals are typically composed of 35 to 45 percent medical personnel, while boards of government hospitals consist mainly of “non-

¹ There is evidence that other attributes of nonprofit and for-profit ownership types do not differ significantly. For example, Patel et al. (1994) find that service mix, costs, and Medicaid/Medicare proportions were not statistically different between the for-profit hospitals and the nonprofit hospitals. In addition, Sloan et al. (1999) find that quality of care does not significantly differ between for-profit and nonprofit hospitals.

business” outsiders,² and boards of church hospitals consist largely of members of the religious order that operates the hospital. The authors conclude that the evidence is consistent with the view that boards of directors of hospitals with different ownership structures have different objective functions, and by extension, different goals.

The empirical evidence indicates that hospitals’ ownership structures are likely to influence their choice of their publicly stated goals. However, while publicly stated goals vary among ownership structures, goals also vary within types of ownership. For example, goals of church hospitals could vary with denominations, or by degree of religiosity. Similarly, goals of government hospitals could vary with characteristics of the patient population.

While hospitals have many goals, this dissertation examines the relation between ownership structure and certain publicly stated goals that the literature suggests will vary by ownership structure. Four goals are identified:

- community health improvement goals – to improve the health of the population served by the hospital (e.g., health education, healthy heart programs) (Nicholson 2000).
- charity care goals – to provide care to individuals who cannot pay (e.g., indigent care, uncompensated care) (Eldenburg 2000).

² “Nonbusiness outsiders” are described as judges, city officials, police chiefs, housewives, and other community members.

- religious goals – to provide care that reinforces the precepts of the religion (e.g., focus on spiritual needs of patients, curtail reproductive health services related to birth control) (White 2000).
- financial goals – to increase profit or cash flows (e.g., focus on more profitable services, volume gains, or revenue growth) (Roomkin & Weisbrod 1999).

How ownership structure is expected to influence hospitals' publicly stated goals is presented next.

Financial viability is important to all hospitals, so both for-profit and non-profit hospitals have financial concerns. Financial viability includes obtaining adequate revenues, positive net cash flows, and profits to ensure the continuity of the hospital. However, since a primary purpose of for-profit hospitals is to return residual cash to owners, they are expected to place greater emphasis on financial goals in addition to financial viability (Norton and Staiger 1994). Also, managers of for-profit hospitals are more likely to publicly reveal their financial goals than managers of nonprofit hospitals. By openly disclosing financial objectives, managers of for-profit hospitals signal their intent to return financial rewards to owners. This can lead to increased investment into the hospital, which in turn can result in increased compensation to the managers. However, nonprofit hospitals face legal restrictions on the earning of profits, and risk losing their tax-exempt status if profits become a primary goal (Roomkin and Weisbrod 1999; Bain et al. 2001). Therefore, the following hypothesis predicts that for-profits will publicly state financial goals more than nonprofit hospitals.

H1: For-profit hospitals will publicly state financial goals more often than nonprofit hospitals.

Nicholson (2000) describes community health improvement and charity care as two important goals of many hospitals. Community health improvement goals aim to improve the health of the people who live in the locality of the hospital, and who often share similar health problems. Hospitals implement a variety of programs to improve community health, including those addressing general health maintenance (e.g., fitness centers, health education), and those directed at more population specific health issues (e.g., smoking cessation, prenatal care, acquired immunodeficiency syndrome (AIDS) prevention). To achieve these goals, hospitals perform community health assessments, and collaborate with local organizations to sponsor health maintenance and improvement programs that prevent or reduce the number and severity of illnesses that arise. These programs are costly in the short run, and are financed mostly from the operating funds of the hospitals (VHA Health Foundation 2001).³

In the long-run, improving the health of probable future patients reduces total health care costs and improves overall health care quality (Proenca et al. 2000). For nonprofit hospitals (government, nongovernment not-for-profit, and church), a reduction in total health care costs results in an improvement in fiscal viability, since they are obligated by their missions and tax-exempt status to provide uncompensated

³ Half of the hospitals participating in a recent survey on community health programs indicated that costs are the greatest obstacle threatening the continuation of their programs. These hospitals also cited a reduction in the costs of compensated care as a reason for implementing community health improvement programs.

care and community benefits. Conversely, because for-profit hospitals do not share these same obligations and operate for profitability, they will realize fewer benefits from community health improvement initiatives. Thus, for-profit hospitals are less likely to have publicly stated community health goals.

As indicated by previously reviewed literature, one role of nonprofit hospitals is to provide health care services (e.g., public goods) that would not be provided by for-profit hospitals (Arrow 1963; Pauly 1987; Frank and Salkever 1994). In addition, nonprofit hospitals are expected to place a greater emphasis on social and community benefits (Arrington and Haddock 1990; Thorpe et al. 1999; Norton and Staiger 1994). Furthermore, providing community health improvement programs reduce long-run costs for the nonprofit hospital. Therefore, the following hypothesis predicts that nonprofit hospitals will pursue community health improvement goals more than for-profit hospitals.

H2: Nonprofit hospitals will publicly state community health improvement goals more often than for-profit hospitals.

Charity care refers to the provision of medical care to those that are unable to pay (HFMA 1987; Nicholson et al. 2000). Consistent with the explanation that nonprofit hospitals provide public goods such as charity care, studies document that nonprofit hospitals provide higher levels of charity care than for-profits (Arrow 1963; Pauly 1987). This premise is further supported by Thorpe et al. (1999) and Ferris and Graddy (1999) who note that uncompensated care declines when hospitals convert to for-profit status. Moreover, for-profit hospitals choose to locate in better-insured areas

where less charity care is required (Norton and Staiger 1994).

While nonprofits in general provide more charity care than for-profits, church hospitals are particularly focused on charity care. The core identity of many church hospitals is the provision of comprehensive health care to vulnerable and underserved populations (White 2000). Frequently, social goals such as meeting the basic health care needs of society and providing health care for the indigent and uninsured are emphasized. White (2000) notes that church hospitals provide a greater quantity of less-preferred services (e.g., AIDS treatment) than other hospitals. Moreover, these hospitals are expected to provide preferential service to the poor. Hypothesis three predicts that church hospitals publicly state charity goals more than do other hospitals.

H3: Church hospitals will publicly state charity goals more than government, nongovernment not-for-profit, and for-profit hospitals.

Church hospitals are also distinguished by ministry values, and an identity as an extension of the church (White 2000). Many church hospitals are sponsored by the religious organization they are affiliated with, and are expected to operate based upon their religious doctrine. For example, church hospitals often require staff to sign agreements and to perform duties in a manner that upholds the moral and religious precepts of the church (White 2000). Consequently, hypothesis four predicts that these churches will state religious goals more than other hospitals.

H4: Church hospitals will publicly state religious goals more often than government, nongovernment not-for-profit, and for-profit hospitals.

Performance Measures and Hospital CEO Compensation

Because hospital CEO's generally are confronted by multiple goals, they have to decide how much total effort to use to achieve these goals and how to allocate that effort across the goals. A direct way owners of hospitals can provide direction for these decisions is to provide their CEO's with compensation that is contingent on their measured performance such that when their measured performance is higher they are more likely to have achieved the owners' goals. This design of performance measurement and incentives is consistent with prescriptions from analytic agency theory research in economics. Designing an optimal compensation contract involves deciding which performance measure to include and determining the relative weight to place on each measure. The weight associated with each measure indicates relative importance, and depends upon organization and manager characteristics and the quality of the measure. Performance measures are often linear combinations of multiple signals. Banker and Datar (1989) show that when multiple signals are linearly aggregated to construct a performance measure in a single dimensional model, the weight on an individual signal is proportional to the product of its sensitivity and its precision. Sensitivity is defined as the extent to which the expected value of a signal changes with the manager's action. Precision is defined as the lack of noise in a signal, i.e., the extent to which variation in a performance measure is caused by factors other than the managers' actions (Feltham and Xie 1994).

In a model with multiple performance measures, the value of a performance measure depends on its congruity, its precision, and its interaction with other variables in the contract (Feltham and Xie 1994; Datar, Kulp and Lambert 2001). Congruity is the degree to which maximizing a performance measure also maximizes the owners' expected gross payoff. If multiple performance measures used in a compensation contract are perfectly congruent, then the weight on a measure will depend on sensitivity and precision as in the single dimensional model. However, in the multidimensional model, increased sensitivity will not result in increased weight if the combination of increased weight and sensitivity will lead to a manager allocating excessive effort towards unprofitable actions (Datar et al. 2001). Other things equal, the weight on a performance measure for compensation purposes should increase with its congruity and its precision, adjusted for the effect of other performance measures.

In summary, different hospitals have different publicly stated goals. According to existing research, compensation contracts should include performance measures designed to motivate hospital CEO's to pursue hospitals' various goals. Weights on performance measures in CEO's compensation should vary depending upon the congruency between the hospitals' goals and the performance measures, the precision in the performance measures, the sensitivity of the measures to the CEO's actions, and the relationships among the measures used in the contracts. Thus, hospitals with different publicly stated goals would be expected to put different weights on performance measures, as analyzed below.

Previous research has provided evidence on how various organizational characteristics are related to the weights on performance measures in CEO compensation. However prior studies provide little direct evidence on how ownership structure or goals are related to the weights on performance measures in CEO compensation. The organizational characteristics included in prior research are proxies for attributes, such as congruity and precision that affect the weight assigned to performance measures in compensation contracts. For example Lambert and Larcker (1995) demonstrate that the use of bonus based compensation increases with the monitoring activities by the board and government – i.e., more congruity and precision. Bushman et al. (1996) find that the use of individual performance evaluation in CEO's compensation contracts increases with proxies for congruity and precision—organization's growth opportunities, and the length of its product development and product life cycles. Moreover, the weights placed on nonfinancial performance measures for CEO compensation are positively related to an organization's level of regulation, use of innovation-oriented strategy, adoption of quality programs—proxies for congruity and precision—and noise in financial measures (Ittner et al. 1997). This dissertation will examine performance measures investigated in previous studies: financial performance and patient satisfaction (Ittner et al. 1997).

Hypothesis five predicts that hospitals that have publicly stated financial goals will put significant weight on financial performance measures for their CEO compensation. Such a weighting will increase congruity between the CEO's actions and the hospital's goals by encouraging hospital CEO's to expend effort toward

increasing the financial performance measure, which would be expected to increase the financial payoff to the owner.

H5: The weight on financial performance measures in CEO compensation is positively associated with publicly stated financial goals.

As previously stated, many hospitals have community health improvement goals, the achievement of which is difficult to measure. This measurement difficulty is cited as a possible explanation why many community health programs show no significant results (Nicholson et al. 2000, Shortell 2000, Wagner et al. 2000). Shortell (2000) explains that the cause and effect model associated with community health improvement programs is complex, and current program evaluation methods have not yet evolved to address these complexities. He presents this cause and effect model in five stages. In the first stage, the community (i.e., hospital and community based organizations) is activated. Second, the community produces interventions. Third, these interventions are exposed to the population. Fourth, interventions cause changes in community norms and environments. Fifth, changes in community norms and environments lead to changes in individual behaviors. Typically community health program evaluations only measure changes in individual behaviors, without adequately considering measurement at other stages of the model. Consequently it is difficult to determine the degree to which the CEO contributed to the outcome of the program, or the degree that other variables in the model contributed to the outcome.

In addition to the complex cause and effect model associated with community health improvement programs, problems arise in developing composite measures of the

effects of multiple programs, or of overall community health. There is no single accepted measure associated with health—as there is for profit—and it is difficult to aggregate the effect of multiple health improvement programs. These programs are very diverse, and problems associated with certain programs are inherently harder to address than problems associated with other programs. For example, Shortell (2000) notes that dealing with a substance abuse problem is likely to be much more difficult than dealing with increasing rates of immunization among school age children. He suggests that risk-adjustments should be made for differences in patient severity of illness, and that greater attention should be given to the etiology of the condition being addressed. He notes that this approach is particularly important when attempting to address a number of different problems in a community. Without standards for composite measures of programs or of community health, it is difficult to measure the CEOs contribution to the programs or to the improvement of overall community health.

Researchers have proposed alternatives to the use of outcome-based measurement methods to determine the benefits associated with community health improvement programs. Nicholson et al (2000) attempt to measure community benefits, including community health improvement, provided by hospitals. Their theoretical model of community benefits includes uncompensated care, the cost of unbilled public-good services, losses on medical research, taxes, Medicaid and Medicare shortfalls, price discounts to privately insured patients, and losses on medical

education.⁴ However with currently available data, and using cost as a proxy for benefits, they could only measure two of these variables: taxes and the cost of uncompensated care. They were unable to measure the benefits (i.e., cost) of community health improvement programs, noting that it is problematic to measure the cost of these programs because such measurement requires distinguishing a free service from a marketing program that is associated with both costs and expected revenues. Without a method for distinguishing the benefits associated with a community health improvement program, it is difficult to determine the CEO's contribution to community health.

Since the achievement of community health improvement goals are difficult to measure, it is not easy to determine the CEO's contribution towards attaining these goals. If measures of the CEO's contributions are too noisy to use in the performance measurement system, and owners do not want the CEO to allocate effort away from community health, then they cannot put large weights on measures of contributions to other goals (Feltham and Xie 1994). As a result, the incentive intensity in the CEO's compensation contract will be lower, i.e., there will be less weight on the less noisy performance measures and less at-risk compensation). Consistent with this premise, Roomkin and Weisbrod (1999) provide empirical evidence from salary data of hospital CEO's which shows that incentive intensity is lower for nonprofit hospitals. They argue that the lower incentive intensity occurs because nonprofit hospitals pursue goals

⁴ Nicholson et al (2000) refer to community health improvement services, such as acquired immunodeficiency syndrome (AIDS) prevention clinic, as unbilled public goods.

related to outputs (e.g., collective good) that are more difficult to measure while for-profits use incentive compensation for performance that is more easily measured (e.g., profits). Similarly, Brickley and Van Horn (2000) find that nonprofit hospitals do not provide higher explicit incentives to motivate CEO's to focus on either altruistic or financial objectives.

Very little information is available in the accounting literature regarding lowering weights on some performance measures because others are noisy. Existing research suggests that when performance measures are noisy, weights on other measures in the contract will be lower. Since measures of CEO contributions towards community health goals are noisy (i.e., difficult to measure), weights on other performance measures in hospital CEO contracts should be lower when community health measures are included. Hospital practitioner literature shows that financial and patient satisfaction performance measures are widely used in hospitals (Flannery and Bolster 1999). The weight on these measures is expected to decrease when hospitals simultaneously pursue community health goals, since the achievement of these goals is difficult to measure. Thus, there should be a negative association between community health goals and financial and patient satisfaction measures used hospital CEO contracts. The next two hypotheses examine the relation between the weight on financial performance measures and community health goals, and patient satisfaction performance measures and community health goals.

H6a: The weight on financial performance measures in CEO compensation is negatively associated with publicly stated community health goals.

H6b: The weight on patient satisfaction performance measures in CEO compensation is negatively associated with publicly stated community health goals.

CHAPTER 3

RESEARCH METHOD AND RESULTS

This chapter describes the research method and results of the tests of the hypotheses. The sample selection and related statistics are explained first. Next a description of the research variables and controls are provided. Following this, the empirical models are presented and discussed. Finally, the statistical tests and results of the models are presented.

Sample Selection and Statistics

The sample selection process encompassed four steps. First, the names and addresses of the CEO's of each hospital in California were obtained from SK&A Information Services, Inc. Second, this list was reconciled with the California hospitals listed in the American Hospital Association's (AHA) 2000 Annual Survey of Hospitals. Because of their unique characteristics, e.g., specialized patient mix and reimbursement policy, federal hospitals and specialty hospitals were excluded from the sample. Third, the survey instrument was mailed to each hospital in the sample. Fourth, second requests and follow up calls were made to each CEO that did not respond to the first request. Within the first three weeks after the survey was mailed, 62 usable responses were received. The second request generated 34 additional usable responses. In total 96 (26%) responses, which comprised the final sample, were obtained from the survey.

Response rates varied by ownership type (Table 1). Response rates from government hospitals were higher than the other ownership types. The mean number of Medicaid days was higher among responding hospitals (12,455 days), as compared to nonresponding hospitals (7,941 days), indicating a somewhat different patient mix. Finally, the size (number of beds) of nonresponding hospitals was compared to those of early and late responding hospitals, and there was no indication of nonresponse bias.

Table 1: Number of Survey Respondents

	Government	Nongovernment Not-for-Profit	Church	For-profit	Total
Surveys sent	71	158	51	96	376
Surveys returned	27	39	12	18	96
Response rate	38%	25%	24%	19%	26%

This table provides the number of respondents by ownership type. The total number of usable responses received was 96.

Survey Data

The survey instrument used in this dissertation was developed to collect data on the variable component of the CEO's compensation. These data were not available from any public sources. The survey instrument requested that CEO's report the percentages (averaged for the previous three years) of their total annual compensation that were fixed and variable. The instrument also requested CEO's to list the performance measures that determined the variable portion of their compensation and the percentage of the variable component associated with each measure.

The design of the survey instrument included consultations with experts, and a pilot study where the survey instrument was tested using a different sample. The initial survey was developed based on the data needs of this dissertation. The survey was piloted to hospital CEO's in the state of Michigan. Experienced academic researchers reviewed the instrument and the results of the pilot study. Based upon the feedback received, the instrument was revised and used in the final survey. A copy of the survey instrument is in Appendix A.

Archival Data

Archival data were obtained from four sources: IRS Form 990's, the American Hospital Association (AHA) Annual Survey, hospital websites, and press releases. The Form 990 is an annual report containing financial, descriptive and programmatic information that nonprofits provide to the IRS. The AHA obtains data from an annual survey of all hospitals in the United States. On average, 82% of the hospitals participate in the Annual Survey. For hospitals that do not participate, the AHA estimates data from alternative sources (e.g., recently received data on the hospital, statistical models, data from similar hospitals).

Variables

Ownership structure. The sample included four hospital ownership structures that were treated as indicator variables. Each hospital was classified, according to the AHA directory, as one of the following ownership types: nonprofit hospitals operated by government (nonfederal) units, voluntary nonprofit hospitals operated by

nongovernment not-for-profit associations, nonprofit hospitals operated by church organizations, and hospitals operated by for-profit organizations.

Goals. The primary source for publicly stated hospital goals was the IRS Form 990. To identify hospitals' publicly stated goals, a content analysis of the Form 990's of hospitals included in the sample was performed. All forms were examined for information that provided evidence of the hospitals' goals. The key information was frequently located in Part III – Statement of Program Service Accomplishments or Part VIII – Relationship of Activities to the Accomplishments of Exempt Purposes. Secondary sources were used for hospitals that did not file a Form 990. The secondary sources consisted of searches of hospital web sites, Lexis/Nexis, reviews of articles and press releases, and public documents published by the hospital. The activity information obtained was then classified into categories. For example, many Form 990's described activities that provided health care services to the poor, “regardless of ability to pay”. These activities were classified in the charity category. Others cited activities such as providing “community health improvement education,” which were classified as community health improvement goals. A goal had to be indicated by at least two hospitals before it was considered as a separate type of goal for analysis purposes.

Although each hospital's statement on the Form 990 was unique, there were four categories beyond providing basic care that emerged clearly: community health improvement (COMHL), charity (CHAR), religious (RELGS), and financial (FINL). Each hospital's information was examined to determine which of the four goals had

been publicly stated. A variable was created for each goal and coded 1 if a hospital's statements indicated that a goal was publicly stated, or 0 if it did not.

To test interrater reliability on goals, 24 (25%) of the responding hospitals were randomly selected and examined by an independent researcher. The independent researcher, who presently conducts survey research, is a certified public accountant and an accounting instructor. After being instructed on the coding method, the independent researcher coded the goals of the randomly selected hospitals. The results from the two researchers were compared, and an interrater reliability of 97% was calculated.⁵ The differences between the two raters were examined, and it was determined that the differences would not have effected the outcomes of the tests of the hypotheses in this dissertation. Examples of actual publicly stated goals are presented in Appendix B.

Variable Compensation and the Weight on Performance Measures for CEO Compensation. The survey responses were used to determine the weight placed on the performance measure. The hospital CEO's provided the percentage of total variable compensation, and the percentage of variable compensation on the performance measures used in their compensation contracts. As mentioned before, this dissertation examines two types of performance measures investigated in previous studies—financial performance and patient satisfaction (Ittner et al. 1997). The survey responses were examined to determine the percentage of variable compensation related to the two

⁵ The formula for interrater reliability is the number of items that were coded the same between the two researchers divided by the total number of items examined. The number of items examined was 96 (4 goals for each of the 24 hospitals selected). The number of items that were coded the same by the two researchers was 93. Interrater reliability was calculated as $93/96 = 97\%$.

types of performance measures. For example, performance measures such as “net operating margin,” “profit margin,” and “not exceeding expense budget,” were classified as financial. To capture the importance of variable compensation as compared to overall compensation, the percentage of total variable compensation was multiplied by the percentage of compensation on the performance measure (Lambert and Larcker 1995). This calculation (variable compensation multiplied by the percentage of compensation on a performance measure) is used as the weight on financial and patient satisfaction performance measures examined in this dissertation.

Controls. According to previous research organizational size, risk, and complexity affect monitoring costs in nonprofit organizations (Pearson, Brooks and Neidermeyer 1998). In addition, Flanner and Bolster (1999) show that larger hospitals use variable compensation more than smaller hospitals. Consistent with prior research, control variables used in the analysis of performance measures were size (number of staffed beds), occupancy rate, competition, Medicaid days, Medicare days, and system membership. Data for the control variables were obtained from the AHA Annual Survey.

Occupancy rate represents an element of risk for hospitals (Younis, Rice and Barkoulas 2001). A difference in rates could affect a hospital’s choice of goals or performance measures used in CEO compensation contracts. For example, a hospital with a low occupancy rate could focus more on patient satisfaction than on financial goals in order to increase occupancy. Alternatively, if the low occupancy rate results in financial problems, the hospital could emphasize financial goals more. Occupancy rate

was calculated from data obtained from the AHA by first dividing the number of inpatient days by 365, then dividing that quotient by the number of beds.

The existence of competition can affect the degree of incentive compensation used. Hospitals in more competitive areas could have a greater need for efficiency, and therefore could have more incentive to adopt efficiency-based compensation contracts (Lambert and Larcker 1995). An index of competition, equal to $(1 - \text{sum of squared market shares})$ of hospitals coresident in the same metropolitan service area as the focal hospital was obtained from the AHA.

The degree of Medicare and Medicaid reimbursement could affect the weight on performance measures since these sources are typically reimbursed to a lesser extent than private sources. For example, hospitals with a larger percentage of Medicare or Medicaid patients may emphasize financial goals less since the profits from these patients will be lower, and the CEO cannot control the amount of the reimbursements. The number of Medicaid days and the number of Medicare days for each hospital was obtained from the AHA. Finally, since management of hospital and health care systems could affect CEO compensation design, a control for system membership was included in the regressions. Hospitals within systems could be required to adopt performance measures related to the needs of the entire system. System membership information was obtained from the AHA.

Contingency Analyses and Estimation Model

Hypotheses 1 – 4, which examined the relation between hospital ownership structure and goals, were tested using 2 x 2 contingency table analyses. A Chi-square

test of frequency was used to test hypotheses 1 – 4. Hypotheses 5 and 6 were tested using the following equation:

$$\text{PMWT} = \alpha + \beta_1 \text{COMHL} + \beta_2 \text{CHAR} + \beta_3 \text{FINL} + \beta_4 \text{RELGS} + \beta_5 \text{CNTRLS} + \varepsilon$$

where:

PMWT	=	performance measurement weight calculated as the percentage of variable compensation multiplied by the weight on financial or patient satisfaction performance measures (FPMWT for financial or PSPMWT for patient satisfaction) in CEO compensation.
COMHL	=	community health improvement goals (1 if hospital has goal; 0 otherwise)
CHAR	=	charity goals (1 if hospital has goal; 0 otherwise)
FINL	=	financial goals (1 if hospital has goal; 0 otherwise)
RELGS	=	religious goals (1 if hospital has goal; 0 otherwise)
CNTRLS	=	hospital size (number of beds), competition, hospital occupancy rate, Medicaid days, Medicare days, system membership
ε	=	error term

This estimation involves two separate equations, one for each performance measure, financial and patient satisfaction. The independent variables for each equation consisted of the four goals and six controls described previously. The two equations were stochastically related because the weight on a performance measure constrained the weight on the other performance measure. For example, if the CEO's contract placed 75% of bonus compensation on financial performance, then only 25% could be placed on the patient satisfaction measure. Although the two equations can be estimated separately by ordinary least squares without bias if the other assumptions of the classical regression model are met, efficiency can be gained by taking account of the cross-equation correlation in the error terms. Therefore the equations were estimated

jointly using seemingly unrelated regressions (SUR) maximum likelihood estimation (Greene 2000).⁶

Since SUR is a method of estimating a system of equations by least squares, the models should be consistent with the remaining assumptions that justify least squares estimation (Greene 2000, Kennedy 1992). A basic assumption of OLS is that the dependent variable in the model can be calculated as a linear function of the independent variables plus a disturbance term. The models are specified according to this assumption, and were tested for specification error.⁷ An inspection of plots of residuals and predicted values, used to examine the models for linearity, did not reveal nonlinear patterns. Although the possibility of omitted variables was indicated, and adding available variables did not yield improvement over the explanatory power of the current models.⁸ Influential data points were also examined, and were determined to be accurate and appropriately represented in the dataset.⁹

⁶ The Breusch-Pagan test of independence indicated that the residuals were correlated ($p = 0.05$) (Breusch and Pagan 1980). This result reinforces the appropriateness of the SUR approach.

⁷ Pregibon's link test (Pregibon, 1979) revealed no problems with either model specification. An alternative form of the model, using the square root of the dependent variable, did yield improved results.

⁸ The Ramsey (1969) regression specification error test (RESET) was used to check for omitted variables. Results indicated the possibility of omitted variables in both the financial and patient satisfaction models. However, specifications of the model with additional available variables did not improve results. Additional variables tested in the model included quality programs, quality goals, and research goals. These variables were selected because of the possibility that other publicly stated goals might have added explanatory power to the model. Actual goals, unavailable for this dissertation, may have added explanatory power to the models. Additional variables, also unavailable, that may have added explanatory power to the model include the extent to which the hospital follows an innovation oriented strategy, and noise in financial measures (Ittner et al. 1997).

⁹ Scatterplots, leverage statistics, and Cook's D (Cook 1977) calculations were used to identify influential points in the data.

Another assumption of OLS is that there are no exact linear relationships (i.e., no perfect multicollinearity) among the regressors, and that there are at least as many observations as there are independent variables. If this assumption is violated, then it is mechanically impossible to compute the least squares estimates. Severe problems result when independent variables are highly correlated. When this occurs, variances of the collinear estimators are very large. To ensure that this assumption was met, variance influence factors (VIF) and correlations for both the financial and the patient satisfaction models were examined. The results indicated that there was no significant multicollinearity among the variables.

Additional assumptions relate to the disturbance term of the models. First, the disturbance terms should be normally distributed. Nonnormally distributed disturbance terms can lead to invalid test statistics in small samples. The disturbance terms should also have a constant variance across observations. Violation of this assumption can lead to inefficient estimators and incorrect inferences because standard errors are miscalculated. Both models were examined for consistency with the assumptions regarding the error terms. While residuals from the financial model approximated a normal distribution, residuals from the patient satisfaction model did not. However, the normality assumption is not necessary for SUR to be unbiased in large samples, and the *F* test statistic for the models is robust to departures from normality in large samples (Greene 2000).¹⁰ White's test (White, 1980) for heteroscedasticity was used to test for

¹⁰ The Shapiro-Wilk test for normality indicated that the residuals from the financial model approximated a normal distribution, while residuals from the patient satisfaction model did not

homogeneity of variance of the residuals. The results indicated that the assumption of homogeneity of variance was adequately met.

Results

Descriptive Statistics. Of the 96 hospitals that responded to the survey, 27 had government ownership structures, 39 had nongovernment not-for-profit ownership structures, 12 had church ownership structures, and 18 were owned for for-profit organizations. Table 2 presents a summary of the distribution of goals across ownership structure.

(Shapiro and Wilk, 1965). Examinations for normality also included histograms, kernel density graphs, kurtosis measurements (3.56 for the financial model, 8.29 for the patient satisfaction model) and skewness measurements (0.54 for the financial model and 1.73 for the patient satisfaction model).

Table 2. Distribution of Goals Among Ownership Structures

Type of Goal	Ownership Structure				Total Frequency of Goal
	Government	Nongovernment Not-for-Profit	Church	For- profit	
Community health improvement only	3	5	0	2	10
Charity only	6	6	0	0	12
Financial only	0	0	0	11	11
Religious only	0	0	0	0	0
Community health improvement and charity	5	2	0	1	8
Community health improvement and financial	2	2	0	1	5
Community health improvement and religious	0	0	1	0	1
Community health improvement, charity, and financial	1	1	0	0	2
Community health improvement, charity, and religious	1	13	11	0	25
Financial and religious	0	1	0	0	1
No goals indicated	9	9	0	3	21
Total by ownership structure	27	39	12	18	96

(Continued)
Table 2 (Continued)

This table provides the number of hospitals, by ownership structure, that indicated each goal or combination of goals examined in this dissertation. For example, a total of ten hospitals state community health improvement goals *only*. Of the ten hospitals that state community health improvement goals three are government, five are nongovernment not-for-profit, none are church affiliated, and two are for-profit. The total number of hospitals in the sample is 96.

An inspection of Table 2 revealed that both government hospitals and nongovernment not-for-profit hospitals stated goals primarily related to community health improvement and charity. A number of these hospitals also expressed goals related to the religion.¹¹ Church hospitals emphasized community health improvement, charity, and religious goals. As expected, for-profit hospitals emphasized financial goals. Community health improvement goals were the most frequently occurring in the sample, while financial goals were the least frequently occurring.

Table 3 presents a summary of the distribution of performance measures for CEO compensation among hospital ownership structures. Of the 96 hospitals that responded to the survey, 64 (67 %) used financial or patient satisfaction performance measures in their CEO compensation contracts that were included in this dissertation. All four ownership types used performance measures in CEO compensation contracts, with financial performance measures only used most frequently, followed by the joint

¹¹ Many of these hospitals were formerly church hospitals.

use of financial and patient satisfaction performance measures. Of the four ownership types, government hospitals used performance measures the least.

Table 3: Distribution of the Performance Measures Among Ownership Structures

Type of Performance Measures Used	Ownership Structure				Total Frequency of Use
	Government	Nongovernment Not-for-Profit	Church	For-profit	
Financial Performance	5	15	4	9	33
Financial Performance and Patient Satisfaction	1	17	7	6	31
No Financial or Patient Satisfaction Performance Measures	21	7	1	3	32
Total per ownership structure	27	39	12	18	96

This table shows the frequency, by ownership structure, of use of each type of performance measure, and each combination of performance measures. For example, financial performance measures *only* were used by 33 hospitals in the sample. Of the 33, five were government, fifteen were nongovernment not-for-profit, four were church affiliated, and nine were for-profit. The total sample included 96 hospitals.

Table 4 presents descriptive statistics for the variables used in the regression equations. The mean value of FPMWT was 0.088 while the mean value of PSPMWT was 0.012. Consistent with prior research, the weight on financial performance measures is greater than the weight on patient satisfaction performance measures (Ittner et al. 1997). The mean size of participating hospitals is 200 beds. Data related to control variables were not available for three of the 96 responding hospitals.

Table 4: Descriptive Statistics -- All Respondents

	n	Mean	Standard Deviation	Median	Minimum	Maximum	Kurtosis	Skewness
Dependent Variables								
FPMWT (Financial)	96	0.088	0.085	0.066	0.000	0.330	2.302	0.553
PSPMWT (Patient Satisfaction)	96	0.012	0.021	0.000	0.000	0.120	9.202	2.199
Independent Variables								
COMHL	96	0.531	0.502	1.000	0.000	1.000	1.016	-0.125
CHAR	96	0.490	0.503	0.000	0.000	1.000	1.001	0.042
FINL	96	0.198	0.401	0.000	0.000	1.000	3.299	1.516
RELGS	96	0.281	0.452	0.000	0.000	1.000	1.946	0.973
Control Variables								
Size (staffed beds)	93	200	149	168	15	756	4.878	1.259
Occupancy Rate	93	0.628	0.182	0.610	0.229	1.000	2.616	0.205
Medicare Days	93	15,706	12,747	11,452	212	50,725	3.039	0.937
Medicaid Days	93	12,455	17,602	6,107	108	131,522	24.043	3.814
Index of Competition	96	0.695	0.272	0.806	0.000	0.862	5.357	-2.049
System Membership	96	0.615	0.489	1.000	0.000	1.000	5.536	-0.471

a. This table presents descriptive statistics on all hospitals that responded to the survey. In total 96 hospitals responded. The number of respondents varies among the variables because of missing data in some categories.

(Continued)

Table 4 (Continued)

b. Variable definitions:

PMWT	=	Performance measurement weight calculated as the percentage of variable compensation multiplied by the weight placed on financial or patient satisfaction performance measures (FPMWT for financial or PSPMWT for patient satisfaction) in CEO compensation
COMHL	=	community health improvement goals (1 if hospital has goal; 0 otherwise)
CHAR	=	charity goals (1 if hospital has goal; 0 otherwise)
FINL	=	financial goals (1 if hospital has goal; 0 otherwise)
RELGS	=	religious goals (1 if hospital has goal; 0 otherwise)
CNTRLS	=	hospital size (number of beds), competition, hospital occupancy rate, Medicaid days, Medicare days, system membership

To investigate the likelihood of nonresponse bias, descriptive statistics were calculated for early respondents, late respondents and nonrespondents. Table 5 presents descriptive statistics for early respondents. The mean value of FPMWT for early respondents was 0.085, slightly lower than the overall mean. The mean value of PSPMWT for the same group was 0.014, slightly higher than the overall mean. The mean size of early respondents was 205 beds.

Table 5: Descriptive Statistics – Early Respondents

	n	Mean	Standard Deviation	Median	Minimum	Maximum
Dependent Variables						
FPMWT (Financial)	62	0.085	0.083	0.066	0.000	0.300
PSPMWT (Patient Satisfaction)	62	0.014	0.024	0.000	0.000	0.120
Independent Variables						
COMHL	62	0.565	0.500	1.000	0.000	1.000
CHAR	62	0.532	0.503	1.000	0.000	1.000
FINL	62	0.145	0.355	0.000	0.000	1.000
RELGS	62	0.306	0.465	0.000	0.000	1.000
Control Variables						
Size (staffed beds)	60	205	142	184	18	661
Occupancy Rate	60	0.643	0.179	0.633	0.229	1.000
Medicare Days	60	16,103	12,889	12,133	212	50,725
Medicaid Days	60	12,122	12,934	6,525	136	51,591
Index of Competition	62	0.687	0.275	0.770	0.000	0.862
System Membership	62	0.629	0.487	1.000	0.000	1.000

This table presents descriptive statistics on all hospitals that responded early (within three weeks of mailing the first survey request). In total 62 hospitals responded early. The number of early respondents varies among the variables because of missing data in some categories. See Table 4 for a description of variables.

Table 6 presents descriptive statistics for late respondents. The mean value of FPMWT for late respondents was 0.093, slightly higher than the overall mean. The mean value of PSPMWT for the patient satisfaction regression was 0.008, somewhat lower than the overall mean. The mean size of late respondents was 191 beds.

Table 6: Descriptive Statistics – Late Respondents

	n	Mean	Standard Deviation	Median	Minimum	Maximum
Dependent Variables						
FPMWT (Financial)	34	0.093	0.090	0.074	0.000	0.330
PSPMWT (Patient Satisfaction)	34	0.008	0.016	0.000	0.000	0.046
Independent Variables						
COMHL	34	0.471	0.507	0.000	0.000	1.000
CHAR	34	0.412	0.500	0.000	0.000	1.000
FINL	34	0.294	0.462	0.000	0.000	1.000
RELGS	34	0.235	0.431	0.000	0.000	1.000
Control Variables						
Size (staffed beds)	33	191	165	107	15	756
Occupancy Rate	33	0.601	0.186	0.599	0.260	1.000
Medicare Days	33	14,984	12,651	10,234	853	42,354
Medicaid Days	33	13,061	24,119	5,974	108	131,522
Index of Competition	34	0.710	0.268	0.811	0.000	0.862
System Membership	34	0.588	0.500	1.000	0.000	1.000

This table presents descriptive statistics on all hospitals that responded late (after the second survey request was sent). In total 34 hospitals responded late. The number of late respondents varies among the variables because of missing data in some categories. See Table 4 for a description of variables.

Table 7 presents data on control variables for hospitals that did not respond to the survey. The data presented indicates that nonrespondents do not differ significantly from respondents. For example, the mean size of responding hospitals was 200 beds, while the mean size of nonresponding hospitals was 186 beds.

Table 7: Descriptive Statistics - Nonrespondents

	n	Mean	Standard Deviation	Median	Minimum	Maximum
Control Variables						
Size (staffed beds)	280	186	143	154	12	946
Occupancy Rate	280	0.594	0.161	0.588	0.135	1.000
Medicare Days	280	16,947	15,325	12,899	516	127,056
Medicaid Days	280	7,941	9,432	5,049	0	62,639
Index of Competition	280	0.687	0.268	0.806	0.000	0.858
System Membership	280	0.639	0.481	1.000	0.000	1.000

This table presents descriptive statistics on all hospitals that did not respond to the survey. In total 280 hospitals were nonrespondents.

As an additional check for nonresponse bias, t-tests of differences of means were performed on the size of nonresponding hospitals as compared to responding hospitals, and on the size of early respondents as compared to late respondents. The results indicated no significant differences in size. Also, t-tests of differences of means were performed on the FPMWT and the PSPMWT of early respondents as compared to late respondents. The results indicated no significant differences in the mean value of the variables between the two groups. Overall, from an examination of the

descriptive statistics, there does not appear to be any significant nonresponse bias.

Hypothesis Tests

H1. Hypothesis 1 predicted that for-profit hospitals state financial goals more often than nonprofit hospitals. Panel A of Table 8 presents a 2 x 2 contingency table with cross-classifications between type of hospital and financial goals. Of the 18 for-profit hospitals, 12 stated financial goals, while only seven of the 78 nonprofit hospitals stated financial goals. The difference was statistically significant with a Chi-square at $p=0.00$. Hypothesis 1 was supported.

**Table 8: Ownership Structure and Goals
Contingency Tables**

Panel A: H1: Cross-classifications of hospital type (for-profit vs. government, nongovernment not-for-profit, and church) and financial goals.

Hospital Type	Financial Goals		Total
	Goal not stated	Goal stated	
For-profit	6 (33%)	12 (67%)	18 (100%)
Non-profit (government, nongovernment not-for-profit and church)	71 (91%)	7 (9%)	78 (100%)
Total	77 (80%)	19 (20%)	96 (100%)

Pearson $\chi^2 = 30.66$, $p = 0.00$

Panel B: H2: Cross-classifications of nonprofit (government, nongovernment not-for-profit and church) vs. for-profit hospitals and community health improvement goals.

Hospital Type	Community Health Improvement Goals		Total
	Goal not stated	Goal stated	
Non-profit (government, nongovernment not-for-profit and church)	31 (40%)	47 (60%)	78 (100%)
For-profit	14 (78%)	4 (22%)	18 (100%)
Total	45(47%)	51(53%)	96 (100%)

Pearson $\chi^2 = 8.50$, $p = 0.00$

(Continued)

Table 8 (Continued)

Panel C: H3: Cross-classifications of hospital type (church vs. government, nongovernment not-for-profit, and for-profit) and charity goals.

Hospital Type	Charity Goals		Total
	Goal not stated	Goal stated	
Church	1 (8%)	11 (92%)	12 (100%)
Government, nongovernment not-for-profit and for-profit	48 (57%)	36 (43%)	84 (100%)
Total	49 (51%)	47(49%)	96 (100%)

Pearson $\chi^2 = 10.01$, $p = 0.00$

Panel D: H4: Cross-classifications of hospital type (church vs. government nongovernment not-for-profit, and for-profit) and religious goals.

Hospital Type	Religious Goals		Total
	Goal not stated	Goal stated	
Church	0 (0%)	12 (100%)	12 (100%)
Government, nongovernment not-for-profit and for-profit	69 (82%)	15 (18%)	84 (100%)
Total	69 (72%)	27 (28%)	96 (100%)

Pearson $\chi^2 = 35.05$, $p = 0.00$

H2. Hypothesis 2 predicted that nonprofit hospitals had community health improvement goals more often than for-profit hospitals. Panel B of Table 8 presents a 2 x 2 contingency table with the cross-classifications between type of hospital and community health improvement goals. More than half (60%) of the nonprofit hospitals indicated community health improvement goals, while only 22% of the for-profit hospitals indicated community health improvement goals. These results imply that nonprofit hospitals emphasized community health improvement goals more than for-profit hospitals. The difference was statistically significant at $p=0.00$ using a Chi-square test statistic. Therefore hypothesis 2 was supported.

H3. Hypothesis 3 predicted that church hospitals state charity goals more often than government, nongovernment not-for-profit, and for-profit hospitals. Panel C of Table 8 presents a 2 x 2 contingency table with cross-classifications between type of hospital and charity goals. Nearly all (92%) of the church hospitals stated charity goals, while only 43% of the government, nongovernment not-for-profit and for-profit hospitals indicated charity goals. The difference was statistically significant using a Chi-square test at $p= 0.00$. Hypothesis 3 was supported.

H4. Hypothesis 4 predicted that church hospitals state religious goals more often than government, nongovernment not-for-profit, and for-profit hospitals. Panel D of Table 8 presents a 2 x 2 contingency table with cross-classifications between type of hospital and religious goals. All of the 12 church hospitals stated religious goals, while only 15 of the 84 government, nongovernment not-for-profit and for-profit

hospitals indicated religious goals. The difference was statistically significant using a Chi-square test statistic at $p=0.00$. Hypothesis 4 was supported.

H5. Hypothesis 5 predicted that the weight on financial performance measures for CEO compensation was positively associated with the publicly stated financial goals. The regression of financial performance measures on goals is presented in Table 9. The coefficient for the publicly stated financial goals was positive ($\beta = 0.060$) and significant ($p<0.001$). Hypothesis 5 was supported.

Table 9: Summary Statistics from Seemingly Unrelated Regressions of Goals on the Weight on Performance Measures

$$\text{PMWT} = \alpha + \beta_1 \text{COMHL} + \beta_2 \text{CHAR} + \beta_3 \text{FINL} + \beta_4 \text{RELGS} + \beta_5 \text{CNTRLS} + \varepsilon$$

Independent Variables	Weight on Performance Measures	
	H5, H6a	H6b
	Financial Performance FPMWT	Patient Satisfaction PSPMWT
Community Health Improvement Goals (COMHL)	0.015 (0.859)	0.002 (0.373)
Charity Goals (CHAR)	0.030 (1.635)*	0.009 (1.717)*
Financial Goals (FINL)	0.060 (3.211)***	0.012 (2.126)**
Religious Goals (RELGS)	0.021 (0.853)	0.000 (0.061)
Size (CNTRLS)	-0.000 (-0.044)	-0.000 (-0.832)
Occupancy (CNTRLS)	-0.063 (-1.254)	-0.009 (-0.567)
Medicare Days (CNTRLS)	0.000 (0.581)	0.000 (1.468)
Medicaid Days (CNTRLS)	-0.000 (-1.410)	-0.000 (-0.269)
System Membership (CNTRLS)	0.052 (2.798)***	0.007 (1.306)
Competition (CNTRLS)	0.058 (1.903)*	0.010 (1.316)
Constant	0.014 (0.486)	-0.001 (-0.097)
Adjusted R ²	0.427	0.211
p-value	(0.000)	(0.008)

n=93 (Original sample size of 96 was reduced to 93 because 3 observations, which had some missing data, were dropped from the analysis.)

Absolute value of t-statistics in parentheses,

*significant at 10%, **significant at 5%, ***significant at 1%, (two-tail)

(Continued)

Table 9 (Continued)

$$\text{PMWT} = \alpha + \beta_1 \text{COMHL} + \beta_2 \text{CHAR} + \beta_3 \text{FINL} + \beta_4 \text{RELGS} + \beta_5 \text{CNTRLS} + \varepsilon$$

where:

PMWT	=	performance measurement weight measured as the percentage of variable compensation multiplied by the weight placed on financial or patient satisfaction performance measures (FPMWT for financial or PSPMWT for patient satisfaction) in CEO compensation
COMHL	=	community health improvement goals (1 if hospital has goal; 0 otherwise)
CHAR	=	charity goals (1 if hospital has goal; 0 otherwise)
FINL	=	financial goals (1 if hospital has goal; 0 otherwise)
RELGS	=	religious goals (1 if hospital has goal; 0 otherwise)
CNTRLS	=	hospital size (number of beds), competition, hospital occupancy rate, Medicaid days, Medicare days, system membership
ε	=	error term

H6. Hypothesis 6a predicted that the weight on financial performance measures for CEO compensation was negatively associated with publicly stated community health goals. The regression results in Table 9 show a positive ($\beta = 0.015$) but insignificant ($p < 0.859$) coefficient for community health goals. Hypothesis 6a was not supported. Hypothesis 6b predicted that the weight on patient satisfaction performance measures for CEO compensation was negatively associated with publicly stated community health goals. The results in Table 9 show a positive ($\beta = 0.002$) but insignificant ($p < 0.373$) coefficient associated with community health goals for patient satisfaction. Hypothesis 6b was not supported.

In summary, this chapter has described the research method and the results of the tests of the hypotheses. The sample was from hospitals located in the state of California. The final sample consisted of 96 hospitals that participated in the survey. The survey provided data on the use of performance measures in hospital CEO compensation contracts. Other data used in this dissertation were obtained from archival sources. The first four hypotheses, tested with contingency tables, examined the relationships between ownership structure and goals. The results supported the four hypotheses that ownership structure is related to publicly stated goals. The last three hypotheses were tested using two regression models. The results supported one of the three hypotheses that publicly stated financial goals are associated with financial performance measures. The remaining two hypotheses, predicting a negative association between publicly stated community health goals and the weight of financial and patient satisfaction measures, were not supported.

CHAPTER 4

SUMMARY AND CONCLUSION

This chapter contains the summary and conclusion of this dissertation. The first part summarizes the hypotheses and results. Following this is a presentation of the contributions and limitations of this dissertation. Suggestions for future research are presented next. The conclusion of this dissertation is presented last.

Summary of Hypotheses and Results

This dissertation empirically tested and predicted relations among ownership structures, goals and the weight on performance measures in CEO compensation. Four hypotheses examined the relationship between ownership and publicly stated goals. Each hypothesis tested predicted relationships between ownership structure and publicly stated goals. Three hypotheses examined predicted relationships between publicly stated goals and the weights on performance measures in CEO compensation contracts. The independent and dependent variables and hypotheses were described in the literature review in Chapter 2. Chapter 3 described the research method and results. In summary, all of the hypotheses predicting relations between ownership and publicly stated goals were supported by the results. One of the three hypotheses predicting the relationship between publicly stated goals and the weight on performance measures in CEO contracts was supported by the results.

The results support the premise that ownership structure is related to publicly stated goals. The results for hypothesis 1 indicate that for-profit hospitals state financial goals more often than nonprofit hospitals. The results for hypothesis 2 indicate that nonprofit hospitals state community health improvement goals more often than for-profit hospitals. Hypothesis 3 results indicate that church hospitals state charity goals more often than government, nongovernment not-for-profit and for-profit hospitals. Finally hypothesis 4 results indicate that church hospitals state religious goals more often than government, nongovernment not-for profit, and for-profit hospitals.

The results also support the premise that the weight placed on performance measures in CEO compensation is related to publicly stated goals, but the composition of the relationship was only partially captured by the model. Hypothesis 5 was supported by the results, indicating that the weight on financial performance measures in CEO compensation is associated with publicly stated financial goals. However hypotheses 6a and 6b, which predicted a negative relationship between the weights placed on patient satisfaction and financial performance measures, and publicly stated community health goals, were not supported. A possible reason for the predicted negative relationship not occurring is that community health goals were included in some CEO compensation contracts, despite the difficulty of measuring achievement of these goals. This could happen, for example, if a hospital thought that community health goals were important enough to be included in a CEO's compensation plan even though the hospital had no clear manner of measuring if the CEO met the goals.

Contributions

One contribution of this dissertation was to examine the relationship between specific ownership structures and publicly stated goals. The results suggest that different ownership structures will publicly state different goals. Specifically investigating the hospital industry, this dissertation provides evidence that organizations that provide similar services, but have different ownership structures, will have different publicly stated goals.

Another contribution of this dissertation was to examine the relationship between publicly stated goals and the weight on performance measures in CEO compensation contracts. The results suggest that publicly stated goals are related to the weight on performance measures in CEO compensation contracts. Specifically, publicly stated financial goals are positively related to the weight on financial performance measures in CEO compensation contracts.

Taken together, these contributions provide insights into the relationship between organizational characteristics and the design of management accounting. This dissertation demonstrates that organizational structures are a determinant of publicly stated goals, and publicly stated goals are a determinant of the weight on performance measures in CEO compensation contracts. Thus this dissertation provides insight into how ownership structures and goals affect management accounting practices.

In addition to the implications for management accounting practice, this dissertation also contributes to research on the hospital industry. The hospital and health care industry is a significant and growing part of the national economy. This

dissertation provides insights into the relationship between ownership structures of hospitals, their publicly stated goals, and hospital CEO compensation design.

Specifically, the results support the premise that hospitals with different ownership structures publicly state different goals. Also, the results suggest that the weight on financial performance measures in CEO compensation is positively related to publicly stated financial goals.

Limitations

Primary potential limitations include imperfect measurement of the variables, omitted variables, and generalizability of the results. These limitations are common to most empirical research. A potential source of imperfect measurement is the publicly stated goals variable. Specifically, hospitals' publicly stated goals might not correspond to their actual goals. In this situation, the compensation plans would reflect actual goals instead of publicly stated goals, and hypotheses predicting an association between publicly stated goals and compensation plans might not be supported.

Another potential source of measurement error is related to the survey data provided by the hospital CEO's. If CEO's substantially misreported the components of their variable compensation, the results of the statistical analysis of this dissertation could be incorrect. Finally, the results of tests on the regressions models indicate the possibility of the omission of variables. If some variables were omitted from the models, the contributions of the variables that were included could have been miscalculated.

Future Research

Future research could provide additional analysis and evidence on the relationship between publicly stated goals and the weight placed on performance measures in CEO contracts. This could involve research into the strategic planning process of hospitals. Specifically this would include how goals are developed, which goals are publicly stated, and how performance measurement and compensation design follow from the goal development process.

Future studies could also examine additional variables that might contribute to models used to explain the weight placed on performance measures in CEO compensation. Moreover, future research could further examine how the achievement of goals that are difficult to measure (i.e., community health improvement goals of hospitals) is included in the performance measurement and compensation design process.

Conclusion

This dissertation empirically tested how organizational structure is related to publicly stated goals, and how publicly stated goals are related to the weights placed on performance measures in CEO compensation design. The results suggest that different organizational structures will publicly state different goals. More specifically for-profit hospitals will publicly state financial goals more than other hospitals, nonprofit hospitals will publicly state community health improvement goals more than other hospitals, and church hospitals will publicly state charity goals more than other hospitals. The results also suggest that publicly stated financial goals are positively

related to the weight placed on financial performance measures in CEO contracts.

APPENDIX A

Survey Instrument

Prefix Firstname MI Lastname
Title
Hospital Name

Date

Dear Prefix Lastname (Hospital CEO),

The compensation of hospital CEOs is important not only to their personal welfare but also for how this compensation motivates their job-related decisions and actions. I am conducting a study of the determinants of hospital CEO compensation and would greatly value your participation in this study. In return for your willingness to take five minutes to provide some information below, I will send you a summary of my results, which I believe you will find personally and professionally valuable. I am gathering other information for my study from publicly available sources. The information you provide below will be kept in strict confidence and not shown to anyone else under any circumstances unless you direct me to disclose it.

Consider your total annual compensation to be comprised of two components: fixed and variable. What percent of your average total annual compensation (excluding fringe benefits) over the last three years is **fixed** (e.g., annual salary) and **variable** (e.g., performance-contingent bonus)? (If you have been in this position less than three years, please use the average of your last one or two years' compensation.) The sum of your responses to the following two questions should be 100%.

What percent is **fixed**? _____% What percent is **variable**? _____% (Fixed + Variable = 100%)

Please list the performance measures that determine your average total annual **variable** compensation. Then list the percent of your average total annual **variable** compensation that is determined by each of these performance measures.

PERFORMANCE MEASURE	% VARIABLE COMPENSATION DETERMINED BY THIS PERFORMANCE MEASURE
_____	_____ %
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
	100%

Thank you very much for your time and cooperation in this important study. You indicate your voluntary agreement to participate by completing and returning this questionnaire. If you have any questions, please contact me at 616-387-5307 or at ola.smith@wmich.edu. (For general questions regarding the role or rights of research participants, you may contact David E. Wright, Ph.D. Chair, University Committee on Research Involving Human Subjects at 517-355-2180).

Sincerely,

Ola Marie Smith, CPA
Ph.D. Candidate
Department of Accounting
Michigan State University

Assistant Professor of Accounting
Western Michigan University

APPENDIX B

Examples Of Statements Used For Hospital Goals

This shows examples of the statements that were used to determine hospital goals. Most statements were taken from the IRS Form 990's of the hospitals.

1. Community Health Improvement

- **a unique diabetes screening initiative targeting 5,000 lives,**
- **neighborhood school immunization clinics,**
- **an elementary school tutoring program,**
- **free community prostate cancer screenings**
- **community education programs**
- **wellness programs**

2. Charity

- **provides medical care regardless of ability to pay**
- **provides services to the poor**
- **Care of the Poor Committee providing care to poor people**
- **Our core values are respect, quality service, simplicity, advocacy for the poor...**

3. Religious

- **provided care in a manner that recognizes and respects the spirituality, value, privacy, and dignity of individual patients and their families**
- **sponsored by the Daughters of Charity of St. Vincent de Paul (a religious order of women)...Our mission is to make a positive difference in the lives and health status of individuals and communities. The health services we provide are spiritually centered ...**

4. Financial

- **plans to improve profitability of hospital**
- **purchased hospital in order to make profits**

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