Are Nonprofits Efficient?
A Test Using Hospital Market Values

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Abstract: While the theoretical literature hypothesizes that nonprofit hospitals are less efficient than for-profits, empirical cost comparisons have been confounded by difficult to measure controls like quality. We bypass this problem by comparing hospital market values measured by sales prices. We ask whether the market for corporate control views nonprofits as less efficient than for-profits? We also address concerns that nonprofit hospitals sell to for-profits at "too low" a price. We find that the market for hospitals is competitive and therefore nonprofit hospitals are not sold at "too low" a price, and that the market values nonprofits as efficiently as for-profits.

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Private nonprofit organizations are significant players in the arts, education, medical care, and other sectors. Often, nonprofits enjoy significant tax breaks, ostensibly because they offer something that for-profits do not. While there is substantial debate over what nonprofits actually maximize, there is a common concern that private nonprofit organizations are less efficient than their for-profit competitors[1]. A similar efficiency concern about state owned enterprises has driven the world-wide wave of privatization of government owned firms over the last twenty years (Shleifer and Vishny, 1994; Shleifer, 1998).

Recent theoretical work, however, is again challenging the notion that nonprofit are necessarily inefficient. For example, Glaeser (2001) suggests that a competitive market can discipline nonprofit management. Kuan (2001) argues that as "consumer cooperatives," where consumers organize around private information to produce a good for their own consumption, nonprofits are efficient.

In this paper we examine whether private nonprofit and government hospitals are less efficient the for-profit hospitals. There is an extensive literature seeking evidence of hospital managerial slack by comparing cost differences between nonprofits and for-profits. However, these studies are unable to control for unobserved quality, and therefore cannot distinguish higher costs from higher quality (Sloan, 2000 p. 1155).

Instead, we exploit the fact that the market for the corporate control of hospitals is active and competitive, and ask whether the market views private nonprofit and government hospitals as less efficient than for-profits. Using data from hospital sales, we ask whether nonprofit and government hospitals sell at a different price than an otherwise identical for-profit. If an efficient for-profit buyer thought it could improve a nonprofit's

[1] See Sloan (2000) for a review of this literature as applied to the hospital industry.

efficiency, it would be willing to pay more for an inefficient nonprofit than for an efficient for-profit, ceteris paribus. Our approach is similar to one used in Kaplan (1989) to study management buyouts in other industries. He finds that buyers in management buyouts pay a premium to shareholders to take a company private because they intend to institute more efficient managerial incentives.

Specifically, we compare Tobin's q -- sales price divided by book value of assets-- of nonprofit, government, and for-profit hospitals, controlling for the firm's presale financial position. Similar approaches have been used to value firm research and development activities (Griliches, Pakes, and Hall, 1986; 1991), measure the effect on market value of management ownership (Morck, Shleifer, and Vishny, 1988) and takeover defenses (Gompers, Ishii, and Metrick, 2001).

Examining hospital sales prices also allows us to address another worrisome policy question. Recently, a large number of nonprofit hospitals have "converted" to for-profit, either by management buy-out or by sale to a for-profit chain.[2] Since the proceeds of the sale of a nonprofit are placed in a public trust and managers of nonprofit organizations may have less incentive to complete due diligence on buyers offers, policy makers have worried that the sales prices maybe too low (Lutz, 1996; Sloan et al, 2000). A "too low" price might occur in an uncompetitive market, where a nonprofit hospital might receive only one low bid and the nonprofits would fail to reject that bid because of inexperienced management. However, Sloan et al (2002) fail to find evidence of "too low" a price in some 20 case studies.

We find no evidence that nonprofits are sold to for-profits for "too-low" or for that matter for "too high" a price. In fact, we find that for-profit buyers pay the same

price for nonprofit and government hospitals as for for–profit hospitals, controlling for financial performance. Also, nonprofits behave like efficient buyers, not over-paying for for-profits. These results are consistent with the hypotheses that the market for hospitals is efficient and that the market for corporate control views nonprofits and government hospitals to be just as efficient as for-profit hospitals.

We do, however, find that nonprofits and government sellers exhibit one important difference from for-profits: they offer nonprofits a price discount. More specifically, religious nonprofit sellers offer religious nonprofit buyers a discount, and nonreligious nonprofit sellers offer both any nonprofit buyers a discount. This finding is consistent with the notion that nonprofits and government sellers give discounts to buyers who are more likely to have similar preferences and are therefore more likely to pursue any nonprofit objectives than would for-profit management.

I. THE LITERATURE ON HOSPITAL EFFICIENCY

Theories as to why nonprofits exist vary, but most conclude that nonprofits are less efficient than for-profits. The many sources of nonprofit inefficiency fall into two categories: technical and allocative. A firm with technical inefficiency operates inside the efficient frontier, while a firm with allocative inefficiency operates on the efficient frontier but not at the profit-maximizing point.

Technical inefficiency can arise when the nonprofit firm's governance or objectives deviate from those of the more efficient for-profit firm. This might occur as a result of ill-defined ownership. For example, nonprofits are thought to lack owners altogether (Hansmann, 1998, Becker and Sloan, 1983); or have diffuse owners, such as

[2] Between 1980 and 1995, 263 nonprofit hospitals converted to for-profit (Cutler, 2000, p. 1).

the community (Sloan et al, 2000) or physicians (Pauly and Redisch, 1973). The weakened governance of ill-defined nonprofit ownership contrasts with the more efficient governance of for-profits, whose clearly defined owners share the same profit-maximizing objective. Another potential source of technical inefficiency may come from tax breaks and philanthropy, which weaken managerial incentives (Lakdawalla and Philipson, 1998). The literature on state-owned firms similarly hypothesizes that inefficiency arises because of weak incentives, poorly defined ownership, and political capture (Shleifer, 1998).

Allocative inefficiency can occur if a nonprofit maximizes something other than profits, such as quantity (Steinberg, 1986), quality (Smith, Clement, and Wheeler, 1995) or both (Newhouse, 1970). In the case of hospitals, one of the most popular ideas about nonprofits is that they exist to serve the poor rather than shareholders (Frank and Salkever, 1991; Norton and Staiger, 1994; Thorpe and Phelps, 1991). A nonprofit with such objectives is expected to "overproduce" quality or quantity, compared with the efficient for-profit.

Not all of the theoretical literature on nonprofits claims that nonprofits are inefficient, however. Recent work on the performing arts (Kuan, 2001a) and open source software (Kuan, 2001b) suggests that nonprofits are not only efficient, but can achieve greater total surplus than for-profits. In these analyses, nonprofits form when consumers organize around some private information to produce a good they wish to consume or use. The resulting objective function is an efficient, aggregated utility function, rather like a profit function.

Another reason nonprofits might be efficient is competition (Glaeser, 2001). Particularly in the hospital market, in which nonprofits, for-profits, and government hospitals often compete in the same local market, competition could discipline otherwise slack management.

Numerous empirical studies have sought evidence of nonprofit technical inefficiency by comparing nonprofit and for-profit hospital costs. These cost studies have employed various methods for comparing nonprofit and for-profit costs, including accounting measures of cost per case, comparisons of hospital pairs, and cost function regression analysis. The results have been all over the map, as some of these studies have found that nonprofits are more costly than for-profits, others have found them to be less costly than for-profits, and a third group found them to as costly as for-profits.[3] Few if any studies have attempted to estimate allocative inefficiency, although some have asked whether nonprofits produce a different mix of outputs.

The difficulty in measuring quality of care and patient severity of illness confounds attempts to document nonprofit inefficiency among nonprofits. "To state conclusively that for-profit hospitals are more efficient, it is necessary to hold…input prices and scale, constant. Even if one could successfully do this, it would be difficult to distinguish whether cost differentials were due to slack or quality" (Sloan, 2000, p. 1155).

II. IDENTIFICATION

We bypass the need to measure quality and patient severity of illness by examining the pattern of sales prices of nonprofit and for-profit hospitals. If the market for hospitals is

efficient, we assume that a sale of a for-profit hospital to another for-profit represents the efficient frontier and that the sale price will represent the net present value of the expected future stream of profits. We use this case as a benchmark for comparison. Different types of inefficiency generate different theoretical predictions about how the sales price of a non-profit to a for-profit and how the sale of a for-profit to a nonprofit compares to benchmark case. The predictions depend both on the relative efficiency of nonprofits and for-profits as well as whether the market for hospitals is efficient (competitive). Below we distinguish three possible cases of nonprofit departure from efficiency, which are summarized in Table 1.

a. Inefficient Markets and Technically Inefficient Nonprofits

This scenario is the one that worries policy makers, as these are the conditions under which nonprofits might sell to for-profits at "too low" a price. In this case, there are few potential buyers and nonprofits lack the technical ability to recognize and reject low bids. Here a for-profit could take advantage of technically inefficient (ignorant) nonprofit management and buy the hospital at a price below the net present value of the expected future stream of profits. However, if there are a large number of potential buyers so that the market for hospitals is competitive, even if nonprofit managers have no idea what are the market values of their hospitals, competition bids up the price of a nonprofit hospital to its "market" value.

While inefficient markets and technically inefficient management imply that nonprofits can sell too low, they also imply that nonprofits buyers may pay too much

[3] See Sloan (2000) for a review of this literature.

when buying for-profits. The hypothesis is that non-profit buyers lack the technical ability to analyze the selling hospital's financial position and construct a "correct" bid.

b. Efficient Markets and Technically Inefficient Nonprofits

With efficient markets, competing bidders would drive up the sales price of the hospital to its market level. If a nonprofit is technically inefficient, a for-profit buyer would expect to be able to install efficient incentives and management that would improve profitability above the nonprofit's current performance.[4] Therefore, it would be willing to pay more for an inefficient nonprofit over an equivalent for-profit with the same presale financial performance. This premium would equal the difference between the value of the firm under inefficient management and the value of the firm under efficient management. However, as in the first scenario technically inefficient nonprofits buyers might pay more for a similar for-profit hospital.

c. Efficient Markets and Allocatively Inefficient Nonprofits

If markets are efficient, and hospitals are on the efficient frontier but allocatively inefficient, then we would again expect for-profits buyers to pay a premium. In this case, the efficient for-profit can improve the nonprofit's financial performance by reallocating production among its different product quantities and qualities. In fact, Sloan's (2001) finding that health complications increase after a hospital converts, suggests that for-profit management might reduce the quality of care after buying a nonprofit hospital.

[4] Note that our hypotheses that inefficient hospitals will sell at a premium to efficient for-profits stem from the change in ownership (governance structure) and management incentives. When changes in governance structure and incentives are not involved, more efficient firms would sell for more than less efficient firms (Gompers, Ishii, Metrick, 2001).

Because allocatively inefficient nonprofits are hypothesized to be managerially efficient (i.e., technically efficient), allocatively inefficient nonprofits would behave efficiently as buyers; as cost-minimizers, allocatively inefficient nonprofits would not overpay for acquisitions. An allocatively inefficient nonprofit buyer would pay no more for a for-profit hospital than an efficient for-profit would pay.

III. THE MARKET FOR HOSPITALS

The intensely local nature of hospital mergers and acquisitions can obscure the extent, nationally, of buying and selling activity. Indeed, many hospital studies focus on specific cases to examine the effects of market concentration (recently, Vita and Sacher, 2001, for example) or of conversion. Yet in just five years, 1995-1999, there were 1361 hospital sales, 28 percent of general acute care hospitals (The Hospital Acquisition Report, Sixth Edition, 2000).

In addition to the high volume of activity, other things persuade us that the market for hospitals is competitive. First, there is evidence that the existence of just two competing bidders prevents underpricing. For example, Goddeeris and Weisbrod (1999) cite a case in which public scrutiny, and an ensuing bidding war, increased the sales price of a nonprofit by 15 fold. Second, the size of hospital transactions (see Table 2) are such that outside expertise would typically be sought, even by ostensibly naïve participants. Our data set, obtained from an investment bank that specializes in the hospital industry, is itself evidence that banking expertise is available to and used by nonprofits and for-profits alike. Moreover, the frequency with which nonprofits reject bids (Sloan et al, 2000) suggests that nonprofits somehow acquire important expertise.

The question of why hospitals are bought and sold is important for anticipating factors that affect market value, and thus our hypothesis tests. A large number of the hospitals are acquired by large national chains, which are interested in growing by acquisition and improving their performance on Wall Street. It is also likely that buyers typically believe that they can improve managerial efficiency and exploit economies of scale, especially in purchasing supplies, to lower costs and increase profit margins. Cutler and Horwitz (2000) argue that for-profits increase profit margins in converted nonprofits through better billing practices and staff cuts (p. 64). Gaynor and Haas-Wilson (1999) and Gaynor and Vogt (2000) provide extensive reviews of the literature on hospital mergers and report that studies generally find some cost improvement.

However, lower costs and increased profit margins may come through reallocation, such as reductions in quality and charity care, rather than through improvements in technical efficiency. Indeed, Picone, Chou and Sloan's (2002) results suggest that increased profits come at the expense of quality of care, as mortality rates rise after nonprofits convert to for-profit ownership.

Others may acquire hospitals in the same market in attempts to increase bargaining power with managed care and other insurance companies. Gaynor and Haas-Wilson (1999) and Gaynor and Vogt (2000) provide extensive reviews of the literature on market power as a result of hospital mergers. They report that these studies generally find price increases after mergers.

Cutler and Horwitz (2000) argue that hospitals are motivated to sell to because of poor financial performance, especially a heavy debt load or negative earnings. Selling a distressed nonprofit to a for-profit may give the nonprofit better access to capital.

IV. DATA SOURCE AND ANALYSIS SAMPLE

Our data consist of 135 completed hospital transactions that span the years 1990 – 2000. However, over two-thirds of the transactions occurred in the last half of the decade. An investment bank specializing in mergers and acquisitions in the hospital industry compiled the data to use as comparables for its business. While the data are in principle public, the bank has taken great care to reconcile the accounting standards of nonprofit and government hospitals with the more conventional accounting standards of for-profit hospitals. Moreover, bank staff carefully standardized the measurement of key financial variables, especially assets. Assets are measured as the sum of all short-term and long-term tangible assets, but exclude intangibles such as good will.

Our sample looks remarkably close to the population of hospital sales. In table 2, we compare a few of the characteristics of the hospitals in our sample to the population of hospital sales between 1995 and 1999 as reported in the sixth edition of the Hospital Acquisition report (2000). Our data set represents about 10 percent of total sales during that period. The average sales price in the sample is $ 72.4 million compared to $ 69.4 million for all hospitals. The average earnings measured by EBIDTA (earnings before interest taxes depreciation and amortization) of hospitals sold in the sample is $ 9.0 million compared to $ 8.7 million in the population. Finally, 71 percent of hospitals sold in the sample were sold by non-profit or government organization compared to 68 percent in the population.

Our data set includes the sales price and a number of key financial variables such as assets, earnings measured as EBITDA, EBITDA growth rate, and debt. Note that

while nonprofits have access to tax-free debt, for-profits cannot benefit from this low-cost debt by buying a nonprofit because nonprofit debt must be retired before ownership is transferred.

In addition, to the financial variables we have information on the number of beds, occupancy rate, and utilization rate, and whether the buyer already owns another hospital in the seller's market. A hospital that buys another hospital in the same market could be buying the hospital in order to increase its market power as well as buying the cash flow or to exploit economies of scale and thereby lower costs. Of the 134 transactions, we were able to determine whether the buyer owned another hospitals in the same market as the seller for 123 cases.

The concern that non-profits are sold to for-profits for two low a price is evident from the descriptive statistics, broken down by transactio type, presented in Table 3. For-profits appear to have paid substantially more for for-profit hospitals than either for nonprofit or government hospitals. For-profit buyers paid on average $175 million for for-profit hospitals compared to about $62 million for nonprofit and about $40 million for government hospitals.

One reason for higher sales price might be that the for-profit hospitals sold are larger than the nonprofit or government hospitals sold. However, the prices paid for for-profit hospitals are substantially higher than those paide for other types even when normalized by the value of assets. For-profit buyers paid $1.27 per dollar of for-profit assets, compared to $0.58 and $0.81 per dollar of nonprofit and government assets, respectively.

A similar analysis explains why there is concern that non-profit buyers may be paying "too-much" for for-profit hospitals. Non-profit buyers pay about two-thirds more for for-profit hospitals than for either non-profit or government hospitals. They also pay for-profit sellers about 15 percent more per dollar of assets than they pay to nonprofit or government sellers, despite the fact that for-profits have lower earnings to assets and debt to asset ratios.

There are a few more important differences between non-profit and for-profit buyers. First, nonprofits buy substantially smaller for-profit hospitals. The average asset size of a for-profit purchased by a non-profit is about 40 percent of the asset size sold to a for-profit buyer. However, non-profit buyers pay the same price to asset ratio as a for-profit buyer pays for a for-profit hospital. This suggests that the market is efficient and that non-profits have or can buy the technical expertise necessary not to pay "too-high" a price.

Not-for profit buyers also purchase hospitals that have been slightly less profitable across all seller organizational types, than those purchased by those purchased by for-profit buyers. However, the hospitals bought by non-profts appear to be no more or less leveraged than those bought by for-profits.

V. METHODS

In order to test our hypotheses, we would like to compare the market value, or sales price, of nonprofit hospitals with the market value of for-profit hospitals. The market value of a firm is a function of its assets, $V = V(A_1, A_2, A_3 \ldots)$. Hayashi (1982) shows that if the market for the firm's assets is competitive and the value function is homogenous of

degree one, then the market value of hospital i in year t is a linear function of the book value of the assets:

$$V_{it} = q_{it} A_{it} \tag{1}$$

where the multiplier is Tobin's q.

To get an estimable specification, we take the log of equation (1). Then the log value of hospital i in year t is:

$$\ln(V_{it}) = \ln(q_{it}) + \ln(A_{it}) \quad . \tag{2}$$

We assume that the multiplier q is a function of the net present value of risk adjusted expected future earnings. Since we don't know the firm's risk adjusted net present value of expected future earnings, we specify the log of Tobin's q to be a function of the current financial performance of the firm and the year in which the hospital was sold:

$$\ln(q_{It}) = \beta_0 + \beta_1\left(\frac{E_{it}}{A_{it}}\right) + \beta_2 \dot{E}_{it} + \beta_3\left(\frac{D_{it}}{A_{it}}\right) + \sum_m \lambda_m X_{mit} + \theta_t + \varepsilon_{it} \tag{3}$$

where E_{it} is hospital i's earnings in year t; $\dot{E}_{it}$ is the recent growth in earnings; D_{it} is the firm's level of debt; the X_{mit} are non-financial strategic factors such as whether the buyer owns another hospital in the same market, hospital size and occupancy; θ_t is a year dummy; and ε_{it} is a random error term.

We obtain our estimating equation by substituting equation (3) into (2):

$$\ln(V_{it}) = \alpha \ln(A_{it}) + \beta_0 + \beta_1\left(\frac{E_{it}}{A_{it}}\right) + \beta_2 \dot{E}_{it} + \beta_3\left(\frac{D_{it}}{A_{it}}\right) + \sum_m \lambda_m X_{mit} + \theta_t + \varepsilon_{it} \quad (4)$$

We first estimate equation (3) and test to see if α is equal to one as hypothesized in (3). Recall that this is a test of whether the market for hospitals is competitive (efficient).

If the data pass this test, then we can estimate a modified version of equation (3) to examine if hospital market value depends on whether the buyer and/or seller is a nonprofit organization:

$$\ln(q_{it}) = \beta_0 + \beta_1\left(\frac{E_{it}}{A_{it}}\right) + \beta_2 \dot{E}_{it} + \beta_3\left(\frac{D_{it}}{A_{it}}\right) + \sum_j \sum_k \phi_{jk} B_{ij} S_{ik} + \sum_m \lambda_m X_{mit} + \theta_t + \varepsilon_{it} \quad (5)$$

where $q = V/A$, B_j is the buyer's ownership type and S_k is the seller's ownership type.

VI. RESULTS

In this section we report the results of three analyses. The first investigates whether the market for hospitals is efficient using Hayashi's (1982) test. The second investigates whether non-profit hospitals are technically or allocatively inefficient relative to for-profit hospitals by comparing relative sales prices. The last set of analyses considers whether non-profits buy other non-profits at a discount.

a. Is The Market For Hospitals Competitive?

The estimation results for equation (4) are reported in Table 3. The dependent variable is the log of the sales price. We estimate 4 different versions of this model all of

which condition on log(assets) and current earnings rate measured by earnings before interest, taxes, interest, debt and amortization (EBITDA) divided by assets. We add the debt to assets ratio in model 2 to adjust for risk, the growth rate in earnings in model 3, and the non-financial variables in model 4.

In all four specifications, the coefficient on log(assets) is almost exactly equal to one and definitely not significantly different from one. This is satisfies Hayashi's (1982) condition for the market for hospitals to be competitive and efficient. Therefore, we can rule out scenario one where the market for hospitals is not competitive and hospitals are technically inefficient, implying that nonprofits are not sold to for-profits at "too-low" a price. This allows us to estimate Tobin's q, as measured by sales price divided by assets, as a dependent variable.

While the earnings to assets ratio has a large and significant positive effect on the sales price, the coefficient on the other covariates are small and not significantly different from zero. A 1-cent increase in the earnings to asset ratio raises the sales price to asset ratio by 2.4 cents or about 2.6 percent. Neither the debt to asset ratio or earnings growth appears to be correlated with the sales price. Also, the sales price seems to be uncorrelated with non-financial characteristics such as whether the buyer owns another hospital in the market, the number of beds and number of admissions.

b. Are Nonprofit and Government Hospitals Efficient?

The estimation results for equation (5) are presented in Table 5. The dependent variables are Tobin's q measured by sales price divided by the book value of assets. The regressors in all three specifications include earnings divided by assets and dummy

variables indicating the ownership types of the buyer and seller. In all cases the omitted comparison type is a for-profit buyer and for-profit seller.

The first column reports the results for a basic specification. The coefficient on for-profit buyers of nonprofits and for-profits buying government hospitals is not significantly different from zero. This implies that there is no significant difference in the sales price when a for-profit buys a nonprofit or government hospitals and when a for-profit buys a for-profit.

These results have two important implications. First, they imply that markets are efficient and therefore reject the hypothesis that nonprofit hospitals are sold for "too low" a price. Second, these results suggest that the market for corporate control views both nonprofit and government hospitals to be as technically and allocatively efficient as for-profit hospitals.

Finally, the results in column one of Table 5 also show that the coefficient on the nonprofit buyer of a for-profit hospital is not significantly different from zero. This implies that that a nonprofit buyer pays the same for a nonprofit as does a for-profit buyer. This is consistent with the earlier result that suggests that the market for hospitals is competitive and that nonprofits behave efficiently as buyers.

c. Do Nonprofit Buyers of Nonprofits Get Discounts?

An interesting result in the first model in Table 5 is that nonprofit buyers of nonprofit hospitals pay significantly less than for a similarly performing for-profit hospital. Nonprofit buyers are given a 43 percent discount. Similarly, the results also suggest that nonprofit may be able to purchase government hospitals at a 29 percent

discount, although this estimate is not significantly different from zero. However, it is significantly different from zero at the 10 percent level in a model where the coefficients on for-profit buyers are restricted to be zero (Model 2).

If nonprofits are efficient, how do we account for the findings that nonprofits and government hospitals sell at a discount to nonprofit buyers? One possibility is incentive alignment. For example, nonprofit hospitals have long been regarded as mission oriented. Indeed, when a nonprofit hospital is sold the proceeds are used to set up public trusts in order to continue serving that mission. Perhaps nonprofits and government sellers offer discounts to sellers that they believe are more likely to continue non-contractible mission objectives such as not performing abortions, keeping an emergency room open, or treating indigent patients.

Indeed, there is anecdotal evidence that nonprofits choose nonprofit buyers over for-profit buyers in part because of mission congruence. For example, in 1995, nonprofit Venice Hospital in Florida was sold to nonprofit Bon Secours Health System. Venice had rejected a bid (undisclosed) from for-profit Columbia/HCA Healthcare Corporation because, according to Venice president and CEO, Jack Norman, "The board liked Bon Secours' culture, charitable mission, financial depth and management team" (Greene, 1995).

To examine this more closely, we further categorize our transactions according to whether a nonprofit is religious or non-religious. Cutler and Horwitz (2000) have emphasized the importance of religious affiliation in hospital conversions. One would expect religious non-profits to give other religious nonprofits a discount, but not give a discount to non-religious nonprofits.

In Model 3 in Table 5 nonprofits are separated into religious nonprofits and non-religious nonprofits, both as buyers and as sellers. Because the sample sizes are small for some of categorizations, we interpret the results cautiously. However, religious nonprofits appear to receive a discount from both religious and non-religious sellers, while non-religious nonprofits get a discount from other non-religious nonprofits. Religious nonprofits appear to be unwilling to give non-religious nonprofits a discount. These models estimate the magnitude of discount to be about 48 percent.

While these results are consistent with the hypothesis that nonprofit and government sellers give discounts to nonprofits that they believe will carry on their mission, it is possible that these hospitals are so bad off that there they could no be sold as a going concern. Are nonprofits buying bad hospitals? Is there some important difference between nonprofits that sell to for-profits and nonprofits that sell to nonprofits? For example, hospitals with dilapidated physical plant located in inner cities. In this case, no profit-oriented organization would ever think of taking it over, implying that only a nonprofit would by it at a steep discount.

To test this hypothesis, we compare the mean financial performance of nonprofit hospitals selling to for-profit buyers to the mean performance of nonprofits selling to nonprofit buyers in the first panel in Table 5. We find no difference in assets, profits or debt. Similarly, we find no differences between the financial performance of government hospitals that sell to for-profit buyers and government hospitals that sell to nonprofit buyers.

d. Does Potential Market Power Affect Sales Price

A for profit might buy another hospital in the same market in order to gain market power. The increase in profits from having more market power would put a premium on a seller. We tested for this possibility in model 4 in Table 5 and rejected the hypothesis that buyers would pay more for another hospital in the same market. However, one hypothesis is that for-profit buyers are more likely to be motivated by this strategy than nonprofit buyers. In model 4 we interact the ownership status of the buyer with whether the buyer owns another hospital in the same market. We find that owning another hospital in the area is not statistically significant regardless the ownership status of the buyer.

V. Discussion and Conclusion

We address the theoretical question of private nonprofit and government inefficiency, and the related policy concern over the pricing of nonprofit hospital assets, using a novel application of financial theory and private market data. We find support for the rather abstract idea that nonprofits are efficient, in general, while offering findings for the hospital industry more specifically.

For example, policy makers' concern that nonprofits will sell at "too low" a price arises because the proceeds from nonprofit hospital sales are entrusted to a public administrator to pursue the original nonprofit hospital's mission. Our own descriptive statistics seem to support the casual observation that for-profit buyers pay more for for-profit assets than for nonprofit assets *before* controlling for profitability. Certain alarming cases, such as Goddeeris and Weisbrod's (1999) and Sloan et al's (2000) observation that

nonprofit “sellers may not have the requisite expertise” (p. 14), contribute urgency to policy concerns.

Nevertheless, stories of near-misses notwithstanding, examples of nonprofit rejection of bad bids, such as in the Bon Secours case above, abound in our data and in the Sloan et al’s (2000) case studies. Moreover, anecdotal evidence suggests that nonprofits have the same access to expertise as for-profits, hiring investment bankers and lawyers for business deals that exceed existing managerial capabilities. Also, it does not surprise us that nonprofits might be less profitable than for-profits, perhaps because they operate in poor inner-city neighborhoods, for example, and that it is this weak financial performance that accounts for the lower asset value of nonprofits. Thus nonprofits get $0.58 per $1 of assets compared with the for-profit’s $1.28 per $1 of assets because those assets are less profitable, not because nonprofits lack the expertise or managerial incentives to get a fair price.

Our other finding that nonprofits sell at a discount to like-minded nonprofits is also not so surprising, as it suggests that nonprofits share similar objectives. One interpretation is that nonprofits share a social mission, and this discount is the value of the nonprofit’s mission or incentive alignment. Since we find no difference between nonprofits that sell to nonprofits and nonprofits that sell to for-profits, we view the discount as a cash equivalent for mission, or a value of non-pecuniary objectives of nonprofits. That is, a nonprofit can choose to sell to a for-profit or to a like-minded nonprofit; it either chooses a low bid from a same-mission nonprofit or a higher bid from a for-profit.

From a theoretical standpoint, we argue that if nonprofits were inefficient firms, poorly managed and without clear ownership, nonprofits would sell at a higher price than for-profits with the same risk-adjusted cash flows. Nonprofits would also pay more than for-profits when buying hospitals. We find no evidence that nonprofits sell at a premium for hospitals. This suggests that nonprofits are as technically efficient as for-profit hospitals with strong managerial incentives and access to expertise.

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Table 1: Sales Price Predictions Relative to a For-Profit Buying Another For-Profit

Market For Hospitals is Competitive	Nonprofit Hospital is		Sale Price[1]	
	Technically Efficient	Allocatively Efficient	For-Profit Buying Nonprofit	Nonprofit Buying For-profit
No	No	No	Lower	Higher
Yes	No	No	Higher	Higher
Yes	Yes	No	Higher	Equal
Yes	Yes	Yes	Equal	Equal

[1]Compared to For-profits Buying For-profits

Table 2: Comparison of Analysis Sample to the Population

	Population 1995-1999	Analysis Sample
Average Sale Price[1]	69.4	72.4
Average EBITDA[1]	8.7	9.0
Nonprofit Seller (=1)	0.68	0.71
Total Number of Sales	1,361	135

[1] Reported in millions of dollars

Table 3: Means and Standard Deviations

Variable	All[3]	Nonprofit Buyer (N=48)			For-Profit Buyer (N=87)		
		For-Profit Seller	Nonprofit Seller	Government Seller	For-Profit Seller	Nonprofit Seller	Government Seller
Sales Price[1]	72.4 (211.2)	71.1 (77.0)	47.6 (40.5)	43.6 (42.8)	174.9 (541.5)	60.8 (58.0)	39.1 (42.1)
Assets[1]	79.3 (166.3)	55.5 (27.9)	82.2 (63.6)	53.7 (35.8)	137.2 (418.3)	76.1 (66.8)	45.5 (52.8)
Tobin's Q (Sales Price / Assets)	0.91 (0.58)	1.10 (0.87)	0.63 (0.41)	0.73 (0.41)	1.24 (0.69)	0.86 (0.42)	1.16 (0.70)
EBITDA[1] (Earnings Before Interest Taxes Depreciation and Amortization)	9.0 (24.9)	4.1 (9.1)	7.7 (6.7)	5.1 (5.6)	18.4 (63.1)	8.9 (8.7)	6.0 (8.6)
EBITDA Growth Rate (Last 2 Years)	0.1 (2.4)	-0.5 (1.1)	-0.1 (0.8)	0.1 (0.8)	0.4 (1.8)	0.2 (3.4)	0.6 (2.5)
Debt[1]	34.8 (88.9)	25.1 (26.3)	32.2 (29.6)	18.6 (20.9)	69.9 (224.9)	35.1 (32.1)	9.1 (13.2)
Buyer owns another hospital in the same market[2] (=1)	0.44	0.92	0.86	0.89	0.28	0.49	0.25
Number of Beds	224.5 (346.1)	177.9 (82.2)	213.2 (141.3)	145.9 (61.5)	369.3 (859.9)	227.1 (136.4)	129.1 (104.5)
Number of Admissions	7727.0 (12863.7)	5528.1 (3017.8)	8072.7 (5421.6)	6072.1 (3561.5)	12032.9 (32056.9)	7544.2 (5026.9)	4998.9 (4847.5)
Number of Observations	135	13	24	11	19	53	15

Notes: [1]The values for these variables are reported in millions of dollars. [2]There are only 125 observations on whether the buyer owns a another hospital in the same market. [3]The number of for-profit sellers is 32, number of non-profit sellers is 77, and the number of government sellers is 26.

Table 4: Basic Sales Price Regression Results

Independent Variable	Model 1	Model 2	Model 3	Model 4
Log (Assets)	0.989*** (0.049)	0.986*** (0.049)	0.975*** (0.057)	1.083*** (0.079)
EBITDA/Assets	2.371*** (0.509)	2.241*** (0.515)	3.242*** (0.853)	3.123*** (0.934)
Debt/Assets		-0.210 (0.143)	-0.226 (0.175)	-0.224 (.191)
EBITDA Growth Rate			0.027 (0.024)	0.027 (0.026)
Negative EBITDA			0.308 (0.265)	0.282 (0.301)
Beds/Assets				0.043 (0.030)
Admissions/Assets				0.002 (0.006)
Buyer has other hospital in seller's market				-0.200 (0.143)
F-Statistic for year fixed effects	2.91***	2.87***	2.62***	2.06*
R-Squared	0.79	0.79	0.80	0.81
Number of Observations	135	135	113	101

Notes: Each column reports the estimated coefficients and standard errors from a separate regression where the dependent variable is the log of the sales price. In addition to the independent variables reported in the table, year dummy variables were included in all of the models. The symbol * indicates that the estimated coefficient is significantly different from zero at the 10 percent level, ** indicates that is significant at the 5 percent level, and *** indicates significance at the 1 percent level.

Table 5: Buyer-Seller Type Regression Results (Dependent Variable = Tobin's *q*)

Independent Variable		Model 1	Model 2	Model 3	Model 4
EBITDA/Assets		2.414*** (0.500)	2.151*** (0.475)	2.075*** (0.475)	2.121*** (.5209)
Buyer Type	***Seller Type***				
For-profit	Nonprofit	-0.078 (0.164)			
For-profit	Government	-0.147 (0.189)			
Nonprofit	For-Profit	0.022 (0.201)			
Nonprofit	Nonprofit	-0.565*** (0.186)	-0.551*** (0.128)		
Nonprofit	Government	-0.344 (0.223)	-0.339* (0.178)	-0.354** (0.178)	-0.482** (0.243)
Religious NP	Religious NP			-0.668*** (0.278)	-0.757** (0.329)
Nonreligious NP	Religious NP			0.023 (0.293)	0.071 (0.352)
Religious NP	Nonreligious NP			-0.637*** (0.242)	-0.756*** (0.284)
Nonreligious NP	Nonreligious NP			-0.690*** (0.191)	-0.771*** (0.247)
For-profit Buyer owns hospital(s) in seller's market (=1)					-0.055 (0.139)
Non-profit Buyer owns other hospital(s) in seller's market (=1)					0.059 (0.171)
F-Stat. for year fixed effects		2.95***	3.79***	3.18***	3.18***
R-Squared		0.40	0.39	0.43	0.42
Number of Observations		135	135	134	123

Notes: The omitted category in model 1 is for-profit buyer and for-profit seller. In addition to the independent variables reported in the table, year dummy variables were included in all of the models. The symbol * indicates that the estimated coefficient is significantly different from zero at the 10 percent level, ** indicates that is significant at the 5 percent level, and *** indicates significance at the 1 percent level.

Table 6: Non-Profit and Government Seller Means

		Ln(Assets)	EBITDA/Assets	Debt/Assets
Non-Profit Seller				
For-Profit Buyer	Mean	4.01	0.10	0.33
Nonprofit Buyer	Mean	3.93	0.12	0.47
	Difference	0.08	-0.02	-0.14
	(T-Statistic)	(0.34)	(1.12)	(0.67)
Government Seller				
For-Profit Buyer	Mean	3.82	0.09	0.26
Nonprofit Buyer	Mean	3.20	0.10	0.26
	Difference	0.62	-0.01	0
	(T-Statistic)	(1.39)	(0.50)	(0.00)