



**Public-Goods Provision in the Hospital Industry:
Does Ownership Form Affect Provision of Charity Care,
Research, and Education?**

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Abstract

State and local legislatures are increasingly questioning what the public is getting back for its property tax and sales tax exemptions of nonprofit hospitals. While the focus has generally been on a particular public-type service, charity care, this paper also examines two other forms of public-good outputs--research and education--to determine whether the subsidized nonprofit hospitals provide more than do for-profit hospitals. Utilizing data reported to the State of California by all hospitals in the State, over time, the paper also distinguishes between the reported provision of charity care and bad debt, a distinction that provides hospitals with some measure of reporting discretion. A major finding is that the effect of ownership form on public good provision is strongly associated with the differential sizes of hospitals, for-profits averaging far fewer beds per hospital.

Public-Goods Provision in the Hospital Industry: Does Ownership Form Affect Provision of Charity Care, Research, and Education?

Introduction

Many service industries are institutionally mixed, with some combination of for-profit firms, governmental agencies, and private nonprofit organizations, religious and secular. Examples include hospitals, nursing homes, and hospices, in the health care sector, as well as higher education, the arts, and day care.

Choice among institutional forms is fundamental to public policy. When public subsidies and tax breaks are given to nonprofit organizations but not to for-profits, when state governments “privatize” welfare services or prisons, when the Federal Government, in the wake of 9/11, nationalizes airport security that was previously in private hands, and when corporate disclosure law (e.g., Sarbanes-Oxley) constrains private firms but not nonprofit or governmental organizations in the same industry, public policy is constraining institutional forms differently. But evidence on whether and how institutional form matters—systematic differences in behavior among for-profit, nonprofit, and governmental organizations—while extensive, remains inconclusive, as do the particular dimensions of behavior that are relevant for public policy.

This paper examines a major institutionally-mixed industry, hospitals, five organizational forms within it—for-profit, secular nonprofit, religious nonprofit, governmental, and academic health centers--and their provision of three types of “public” or “collective” outputs—services to the poor and uninsured, scientific research, and education. The goal is to determine whether the various organizational forms differ in their provision of these outputs, which could justify differential subsidies and constraints. In particular, do the subsidized private donations and other governmental subsidies and tax exemptions to private nonprofit and governmental hospitals, but

not to for-profits, lead to their greater provision of these public-type services that are, presumptively, socially efficient but privately unprofitable?

The origins of public subsidies for nonprofit organizations have much to do with expectations of public-goods provision, particularly of hospitals' provision of "charity care" and other services of "community benefit." Both federal and state tax laws are at issue. In Illinois, for example, the concept of a community-benefit justification for a hospital's property tax exemption has been rejected in favor of an explicit charity-care requirement. And while that requirement has not been defined, the claim that one large hospital was not living up to its charity-care obligation led the Illinois Department of Revenue, in 2004, to revoke the property tax exemption of the Provena Covenant Medical Center, in Urbana, Illinois (Columbo 2006). Not only is the required *level* of charity care not defined operationally—although subsequent legislation proposed that tax-exempt status require a hospital to provide "free care to any uninsured Illinois resident with family income equal to or less than 150% of the federal poverty level" (Columbo 2006, at 528)--but neither is the way to *measure* charity care for the purpose of satisfying the requirement. This is an important matter that also extends to the measurement of other collective services such as research and education. Later in this paper I will return to this measurement issue and its consequences.

Whether nonprofits can be expected to provide, and do provide, more public goods is a key matter with potent implications for tax policy. Theory can take us only a limited distance in answering the question of whether to expect differential collective-good behavior across institutional forms, in the hospital industry or elsewhere. To the extent that medical research, education, or charity care are truly unprofitable for the provider, a profit-maximizing firm would not produce them. It is noteworthy, though, that even a profit-maximizing firm would engage in seemingly "unprofitable" activity if donors, regulators, or others responded sufficiently positively

by increasing donations or relaxing enforcement of regulatory constraints. As is evident with private firms' use of "loss leaders," a loss on some form of output can be profitable overall.

Governmental and nonprofit hospitals (hereinafter referred to collectively as "not-for-profit") *might* provide truly unprofitable public goods even at a true overall loss—if they saw doing so as advancing their missions and revenue constraints made doing so possible. Such a "bonoficing" mission (Weisbrod 1988) could include provision of one or more public goods.

Just as theory cannot rule out missions that include public goods, so can it not rule out the possibility that not-for-profits have no such public-good preferences and are simply For-Profits-in-Disguise (Weisbrod 1988). This could occur if the "nondistribution constraint", NDC (Hansmann 1980), while legally precluding these organizations from distributing their profits to owners or managers, was poorly enforced.

With theory being insufficient to conclude that any form of not-for-profit organization behaves systematically differently from a for-profit organization in the same industry, in the provision of public goods, empirical evidence is needed. Prior empirical research on the hospital industry has focused on differences across ownership forms in such dimensions as a hospital's total charity care (Nicholson *et al* 2000) or the hospital's overall "quality" in dimensions that are difficult for consumers to observe (Picone, Chou and Sloan 2002). This paper compares provision of three types of collective-goods by California for-profit (FP) hospitals with each of three other ownership types: religious nonprofit (RNP), secular nonprofit (SNP), and public (PUB). It also distinguishes Academic Health Centers (AHC)—hospitals run by universities (public or nonprofit)—from other hospitals of the same ownership form. (In addition, we report, but in the interest of brevity do not discuss, findings for governmental rural, "district," hospitals.) The data cover all of the approximately 500 hospitals in California, for 22 years beginning with 1976-77.

A finding that any form of not-for-profit does or does not differ from a for-profit in provision of a public good would not necessarily imply that the differential subsidies are either efficient or inefficient. In a competitive environment, and subject to concerns about regulatory treatment, for-profits might seek to emulate the public-goods activities of their public or private nonprofit competitors (Clement, Jan P., Kenneth White and Vivian Valdmanis, 2002), in which case no differences would be observed but it would be incorrect to assume that the subsidies to public and nonprofit providers had no effect on public-good provision. And even if it were found that the subsidies and constraints did have the effect of increasing public-good output at not-for-profit hospitals, that would not answer the question of whether some alternative approach might not be more efficient—for example, purchasing a public good from a for-profit hospital rather than subsidizing other forms of hospitals (Kane and Wubbenhorst 1994, Morrisey, Wedig, and Hassan 1996; Nicholson *et al* 2000).

The separate analyses, in this paper, of two types of private nonprofits, religious and secular, RNPs and SNPs, flow from a desire to see whether they pursue systematically different missions. Both are subject to many of the same constraints—the nondistribution constraint on profits or surplus (Hansmann 1980), eligibility for the same public subsidies and tax exemptions under federal and state tax laws, and they are subject to the same anti-trust laws. Yet prior research has disclosed systematic differences in their missions (Kapur and Weisbrod 2000), in other constraints on pursuit of those missions—e.g., access to volunteer labor (Weisbrod 1988)—and in the manner in which they reward and provide incentives to their CEOs (Ballou and Weisbrod 2003, Erus and Weisbrod 2003).

There has been considerable empirical study of differential behavior of for-profit relative to nonprofit and public organizations in health care—more than 250 published

studies according to a recent review (Schlesinger and Gray 2005). These cover not only hospitals but also nursing homes, home healthcare, hospice care, rehabilitation services, psychiatric services, and so on. Of the 125 of those studies dealing with acute-care hospitals, 39 compared “Accessibility for Unprofitable Patients”—similar to our measurements of charity care and uncompensated care--and three-fourths of those, 29, found greater access at nonprofits (Schlesinger and Gray 2005, Exhibit 4). Our study is unusually large, however, involving all of the approximately 500 hospitals in California, covering more than two decades, 1976-1997, and examining provision not only of charity care and its variant, uncompensated care, but also other public goods in the forms of research and education. In addition we direct attention to the role of Academic Health Centers as providers of these public goods.

This paper finds that institutional form does matter in hospital public-good markets, though in a somewhat surprising way, and differently among the three forms of public goods. Overall, the differences between provision levels at for-profit and each form of not-for-profit are strongly associated with the systematic differences among ownership forms in hospital sizes.

Data and Methodology

In California each hospital reports its “expenditures” on many activities annually to a State agency, the Office of Statewide Health Planning and Development (OSHPD). This paper examines the reported expenditures on three public or collective services--care for the uninsured poor, research, and education. A hospital’s care for the uninsured poor is measured in two ways—its reported “charity care” and “uncompensated care,” the sum of charity care and bad debt. Bad debt may be related to charity care, a matter discussed

below. There are no explicit legal requirements that a hospital provide a specified level of care for the poor and uninsured,¹ or of education or research, and so each hospital can be viewed as choosing its own levels.

Measuring a hospital's provision of a collective good by its own reported expenditures is not problem-free. Self-reported data are potentially affected by the hospital's incentives to overstate its "expenditures" on collective outputs if doing so might favorably influence, say, state regulators or private donors. Such implicit incentives could operate differentially on hospitals of various ownership forms. The OSHPD data reflect no explicit reward structure that encourages overstatement or understatement of collective goods provision by any form of hospital, but we cannot rule out subtle, implicit, incentives. For example, for-profit and religious nonprofit hospitals might be differentially sensitive to charges that they provide "too-little" care for the uninsured poor, and the supply of volunteer labor or donations to a nonprofit hospital might be affected favorably if it displayed more concern for the needy. (There could be less public concern over the levels of research or education.) As a result of these forces, hospitals' reported expenditures might reveal a wide range of similarities or differences across ownership forms in their "expenditures on" collective outputs.

Differential accounting procedures might also be used to influence the reported expenditures on collective goods. A hospital wanting to show greater provision might allocate more joint costs to a collective-good activity, thereby showing greater "expenditures" on that good. (For an analysis of joint cost allocation issues in a number of industries, including health, see Cordes and Weisbrod 1998, and Sinitsyn and Weisbrod

2006). Determining when a particular expense is appropriately allocated to “research,” “education,” or “charity care” involves judgment and discretion.

There is no standardized procedure for hospitals’ expenditure reports to OSHPD. If, as in the case of charity care or bad debt, an expenditure or cost is measured by the uncollected revenue, then the reported amount depends on the prices established by the hospital for the service provided, and these “charges” can and do vary greatly among hospitals. If a hospital reports charity care based on its stated “charges” for the patient care it provided, even though those “list” prices are seldom paid, the reported charity care would be greater than if some other measure were used, such as an average of the actual prices paid, net of discounts negotiated with insurers. The point is that two hospitals providing identical services could have different charges and, hence, could report different levels of charity care for providing identical care to identical patients. Whether hospitals of varied ownership forms differ systematically in their pricing policies and, hence, in their expenditure reporting practices, is a complex matter deserving more attention.

Despite these *caveats* about the interpretation of hospitals’ reported expenditures on collective-good outputs, we judge that there is information content in the data collected by the State of California, and we proceed to analyze differentials across institutional forms. First, we estimate Ordinary Least Squares (OLS) regression equations for each year and each type of collective service, to examine the relationships between a hospital’s institutional form and its reported expenditures on (1) care for the poor and uninsured, measured, alternatively, as “charity care” and “uncompensated care” (charity care plus bad debt), (2) research, and (3) education, controlling for the hospital’s size (number of beds). For-profit hospitals are the omitted form, and so all of the estimated coefficients on the

institutional form variables indicate predicted differences from for-profits of the same size. The importance of the size variable is discussed below, our conclusion being that a meaningful question to ask, recognizing the considerable differences in size across ownership forms, is whether a typical hospital of each type—typical in its size as well as unobserved characteristics—can be expected to differ from a typical for-profit hospital in its collective-goods provision.

We want to focus some attention on the small number, but arguably important set, of hospitals that are Academic Health Centers (AHCs), but the OSHPD data do not include an AHC identifier. We define that class as consisting of hospitals with the term “university” in their name. Over the two decades, there were 12-14 AHCs, depending on the year. We estimate the effects of institutional form that, alternatively, distinguish AHCs as an organizational form, or that include them with other hospitals of the same ownership type, e.g., secular nonprofit.

Hospital Size. The question of whether institutional form matters in the provision of public goods is complex. A key issue is the treatment of a hospital’s size, which differs greatly among ownership forms. The typical for-profit hospital is far smaller, in terms of the number of beds, than the typical hospital of each other type. In 1996-97, the latest year for which we have data, the mean size of for-profit hospitals in California was 137 beds (table A6), while at public hospitals it was almost triple that—403 beds (tables A3)—and AHCs averaged 620 beds (table A5). There is no reason to believe that these large differences result from chance. Rather, we see size as a reflection of hospitals’ decisions on the range of services to provide—the for-profits offering a far smaller range of services, while AHCs are the most full-service hospitals (Weisbrod 2006). Thus, we focus on the

following formulation of the question: Does the average hospital of each ownership form differ in its levels of provision of the three public goods we examine? An alternative formulation would be to ask whether hospitals of different organizational forms would be predicted to differ in their public good services *if*, contrary to fact, they were constrained to be of the same size. We focus on the first, unconstrained, formulation, although our regression estimates, provided below, permit examining both. The answers to the two formulations of the question differ sharply. We find that, in general, institutional form affects collective-good activity primarily through the systematic differences in hospital size. For-profit hospitals are relatively small because they choose to provide a narrower range of services. A hospital seeking to maximize profit will choose to provide less public-goods outputs than one pursuing a wider mission, and, so, will be smaller.

Our approach provides estimates that permit answering the following type of question: What change in public-good provision would we predict if a hospital of one ownership form or size was converted to a hospital of another form or size? One interesting special case, on which we focus is this: What change in public good provision would we predict if a hospital that is of the average size of one ownership form converted to another ownership form and adjusted to the average size of hospitals of the new form? Another special case would be the predicted change in public good provision if a change of ownership form occurred but the hospital size was constrained to remain unchanged.

Data Description. Table 1 provides descriptive statistics for the entire California hospital industry each year, while data for each hospital ownership type are in Appendix Tables A1-A6. All expenditure data have been converted to constant 1982-1984 dollars, deflating the OSHPD data by the Consumer Price Index-Medical Care.

During the 21 years studied there were many changes in the California hospital industry. The total number of hospitals (column 1) dropped by over 20 percent, but their average number of beds (column 2) grew by some 25 percent, resulting in a small decrease in total beds. The proportion of hospitals that were for-profit fell (column 8), and increased for secular nonprofits. Average expenditures on education grew by more than a third in real terms (column 10), expenditures on research (column 9) remained small and showed no clear time pattern. Charity care (column 11) displayed a cyclical pattern, decreasing between 1976 and 1982, then increasing until 1992, and, unexplainedly, dropping sharply in 1993 and then remaining essentially stable. Particularly remarkable is the growth of bad debt—discussed further, below—which more than tripled between the late 1970s and early 1990s (column 12).

Since our goal is to determine whether public-good provision in public and nonprofit hospitals differs from their provision in for-profits, it is useful to begin by observing the levels of public-good outputs provided by the for-profits. Table A6 (column 3) shows that for-profit hospitals' reported expenditures on *research* as virtually imperceptible throughout the two decades, in only one year averaging as much as \$500. Expenditures on *education*, while greater, were still tiny, only once reaching an average of \$25,000 per hospital per year (column 4). *Charity care* and *uncompensated care* (charity care plus bad debt), however, tell a more intriguing and substantial story at for-profit hospitals (columns 5-7). Most striking is the far higher level of bad debt relative to charity care at for-profit hospitals than at all hospitals, and the enormous increase in charity care expenditures over the two decades—hovering around only \$2,000 until 1984, then soaring beyond \$100,000 by 1992. We examine bad debt, which might well be regarded as not

measuring provision of a public good, because the accounting distinction between bad debt and charity care involves judgments that respond to hospitals' perceived incentives to report "uncompensated care" as one or the other—a matter to which we will return. It is noteworthy that the quantitative relationship between the two forms of uncompensated care has varied a great deal over the 21 years, and although developing an explanation for that variation is beyond the scope of this paper, it is worthy of study in part because of the importance of disentangling the effects of real changes in patients' characteristics and in hospitals' reporting.

The puzzle of identifying the process through which services that a hospital provides but is not "fully compensated" is reported as charity care or bad debt (or, for that matter, as neither, as is the case with services paid for by Medicare or Medicaid programs) is highlighted by the changing magnitudes. At for-profit hospitals, over the 21 years of our data, the reported expenses for charity care increased enormously faster than the reported bad debt (Appendix table A6). Uncompensated care per for-profit hospital never fell below \$220,000 in real terms, climbing above \$900,000 in the later years (column 7). The growth rate was especially great for charity care, which increased more than 50-fold, from under \$2,000 per for-profit hospital in all but two of the years up to 1984-5 (when the Medicare DRG-based pricing system was instituted), to more than \$100,000 in the most recent years (column 5). Reported bad debt, by contrast, while absolutely far larger, increased much more slowly, less than quadrupling (column 6). In the 1970s reported charity care was less than 1 percent of bad debt. By the 1990s it reached 10-15 percent. A virtual "sea change" occurred at the end of the 1980s, when reported charity care at for-profit hospitals began five years of sharp growth.

Further research is needed on the reasons for the enormous change in the relative amounts of charity care and bad debt reported by for-profit hospitals. Among the possibilities are policy changes by for-profit hospitals to report more of what they do as charity care, perhaps in response to political and regulatory threats. In borderline cases the policy changes might have led for-profit hospitals to record as charity care activity that, utilizing prior procedures, would have been reported as bad debt. Another possibility is that the for-profit hospitals increased their list prices--“charges”—so that a particular act of charity care would be recorded as involving a greater “expenditure” (more foregone revenue).

At other types of hospitals, public and nonprofit, the relative levels of charity care and bad debt also changed, though comparatively far less than at for-profits (tables A1-A5). At Secular Nonprofits (SNPs), bad debt was about 3-4 times the level of charity care at the beginning of our time series, but it fell to about 2 times in the last six years (table A1a). At Religious Nonprofits (RNPs) the pattern of change was similar to that at SNPs, the ratio of bad debt to charity care falling from the 3-4 range to close to 1 in the more recent years (table A2a).

At public hospitals the relationship between reported charity care and bad debt differs markedly from that at for-profit hospitals (table A3a). At the for-profits, reported bad debt was consistently far greater than charity care, but the opposite is the case at public hospitals (excluding AHCs), except for a few years in the early 1980s and again in the mid-1990s.

At AHCs, the reported charity care was consistently greater than the bad debt, although the ratio varied considerably, from as much as seven times greater in 1978-79 to

virtual equality in 1994-95 (table A5). There was a precipitate drop in charity care in 1993-94, which more than fully reversed a sharp increase eight years earlier.

How much of all these differences and changes in them were real, how much reflected changes in accounting practices, and how much was error in reporting or tabulation remain issues deserving more attention. It is noteworthy that, to the best of our knowledge, there were no explicit or apparent implicit incentives for any hospital to bias their report on expenditures—that is, there were no clear rewards or penalties associated with reporting a higher or lower level of provision of any or all public goods. The California office collecting the data, OSHPD, wielded no power over the behavior of hospitals. But at the same time, with the data being available publicly, and certainly to interested parties such as prospective private donors and governmental regulators, it is not difficult to see the potential for hospitals engaging in strategic reporting practices. Even so, the critical matter is whether such behavior differs systematically among hospital ownership forms.

Methodology. Our approach involves, first, estimating OLS regression equations for each year, the dependent variables being a hospital's reported expenditure on each type of collective good—(1) care for the uninsured poor—measured in two ways, by “charity care” and by uncompensated care (charity care plus bad-debt), (2) education, and (3) research—and the explanatory variables being the hospital's size (number of beds) and dummy variables for each not-for-profit organization type—secular nonprofit, religious nonprofit, and public, and whether the hospital is an Academic Health Center (AHC). The excluded organization type is for-profit. Thus, the estimated coefficients on organization type are differences from for-profits.

As a test of robustness, we also estimate a fixed-effects model that controls for characteristics of each hospital that, while unobservable, vary across hospitals but are constant for each hospital over the entire 22-year period. The findings from this model, discussed below, are especially consistent with the annual OLS estimates in underscoring the importance of a hospital's size, apart from its ownership form, for explaining differential provision of collective goods. The larger the hospital the more public goods it can be expected to provide. For-profit hospitals are, on average, substantially the smallest, while public hospitals and AHCs (all of which are either public or secular NP) are substantially the largest and provide significantly more public-good outputs.

Findings

Care for the Uninsured Poor: “Charity” Care and “Uncompensated” Care

Tables 4 and 6 present the annual OLS regression estimates for the relationships between a hospital's expenditures on care for the uninsured poor, using both the charity care (table 4) and uncompensated care (table 6) measures, and the hospital's organizational type and size. For each year there are two rows. The first line categorizes hospitals only by their ownership form, while the second line separates out those hospitals that are AHCs, classifying them as a distinct hospital form, even though some are public and others are SNP. There are only 12-13 AHCs in any given year, but they are considerably larger than other public and nonprofit hospitals, and they provide far more of all collective goods.

Table 4 shows a number of clear patterns in charity care. Larger hospital size is associated with significantly greater provision of charity care every year, controlling for

hospital type--an additional bed being associated generally with an additional \$10,000-\$20,000 of charity care (in constant 1982-1984 dollars), though less in more recent years covered by the data. (Research now in progress is examining more-recent data, for the years 1997-2006.) When the average for-profit hospital's much smaller size is considered (See Appendix tables), table 4 provides estimates of very substantially higher levels of charity care at all other types of hospitals, associated with their greater size. In 1996-97, for example, for the average SNP, which had 254 beds compared with 137 for the average for-profit, a difference of 117 beds, is associated with an estimated \$822,000 more charity care than at the average for-profit-- $\$506,000 + (254-137) * \$2,700$ --using the estimates from the row 1 model for that year, or \$617,000 more charity care using the estimates from the row 2 model in which AHCs are treated as a distinct hospital type-- $\$440,000 + (254-137) * \$1,500$. In the most-recent years covered, SNP hospitals are estimated to provide more charity care than for-profits both because the nonprofits are larger and because a SNP hospital is expected to provide more charity care even apart from its size. In earlier years, however, while charity care is consistently estimated to be substantially greater at SNPs, the effect of size is larger and the effect of ownership form, controlling for size, is smaller—indeed, negative. In 1976-77, for example, the estimated additional charity care at a SNP of mean size (217), compared with a for-profit of their mean size (110), is $\$358,000 - (-\$1.83 \text{ million}) + (217-110) * (\$18,700) = \$358,000$ from the model that does not distinguish AHCs from others of the same ownership form, or \$488,000 from the model that does distinguish them (using data from table 4, columns 2-3 and tables A1 and A6, column 2). In many years the estimated effect of the SNP form is negative, but the negative effect is consistently swamped by the positive effect of the larger size of the average SNP hospital.

The average public hospital that is not an AHC--having 319 beds in 1996-97 (table A3a)--also provided far more charity care than a typical for-profit—an estimated \$735,900 + $(319-137)*(\$1,500) = \$1,009,000$ more. This figure, while substantial, is dwarfed by our estimates for almost all prior years. In the years 1985-86 through 1993-94, for example, the public hospitals provided an estimated \$7-\$11 million per year more charity care than the average for-profit. The higher level of charity care from public hospitals is associated with both the ownership form and the larger size of the average public, as compared with for-profit hospital. Why the differential charity care between public and for-profit hospitals reportedly narrowed deserves more study, as does the question of whether the narrowing reflects a systematic change in hospital reporting methods, for OSHPD does not prescribe a methodology for calculating charity care or other variables, or a change in actual provision, and, if the latter, whether for-profits provided more or publics provided less.

The dozen or so Academic Health Centers (AHCs) play an especially important role in the charity care market. Almost entirely either public or SNP, these hybrid organizations of a hospital and a university provided an estimated average of \$4.9 million more charity care in 1996-97 than the average for-profit, and still more in many prior years such as 1989-90, when AHCs provided an estimated \$35.1 million more charity care (in constant dollars). While the year-to-year variation in estimated charity care differentials deserves more attention, the conclusion remains that the AHC segment of the California hospital industry, including but 2-3 percent of all hospitals in the state, are a massive element in the provision of charity care to the uninsured poor.

The OLS estimates make clear the importance of hospital size—and all forms of not-for-profit hospitals, public and private, are systematically larger than are their for-profit

counterparts. If the relationships between a hospital's size—which presumably reflects its objectives and the size that is optimal for optimizing them, subject to the budget constraint—and its level of charity care were to be disregarded, we estimate that religious nonprofits (RNPs) would not differ significantly from for-profits in the provision of charity care (table 4, column 4),² and secular nonprofits (SNPs) would be predicted to provide *less* charity care than for-profits. Public hospitals, however, and AHCs, would still be predicted to provide millions of dollars of charity care annually (table 4, columns 5 and 7).

For Secular Nonprofits (SNPs) we find that, but for their greater size and its positive effect on charity care, this form of nonprofit would be expected to provide less, not more, charity care than a typical for-profit during the 14 years 1976-77 through 1989-90 (table 4, column 3). This negative effect is more than offset, however, by the positive effect of their greater size.

AHC hospitals, however, are estimated to provide significantly and substantially more charity care than for-profits quite apart from the effect of their larger size (table 4, column 7). Public hospitals (excluding AHCs) are also estimated to provide more charity care, at least in the decade since 1985-86 (column 5). For these two types of hospitals, both size and institutional type contribute to their higher levels of charity care.

The importance of hospital size in explaining the level of a hospital's charity care highlights the question of why size varies so much across institutional forms and, most specifically, why for-profits are so much smaller. It is likely that the smaller size of for-profit hospitals is not the result of a random process but of the systematic differences between their goals and those of other types of hospitals. If, for example, a for-profit acts as a profit-maximizing firm, attempting to maximize shareholder value, while the other forms

had “bonoficing” (Weisbrod 1988) goals that included providing at least some public goods, then for-profits would be smaller, providing less, if any, of the public goods. Thus, with a hospital’s size being the result of its optimal adjustment to the set of outputs it deems worth providing, the differential provision of charity care to the uninsured poor, or education, or research, would be captured in two ways--by the sum of the direct effect of the hospital’s objectives, as measured by its ownership form, and the indirect effect of those objectives on the hospital’s size which, in turn, effects its provision of public goods.

Bad Debt and Uncompensated Care

One accounting practice that could distort reported data on “charity care” is a hospital’s policy on when to report an expenditure as charity care and when as bad-debt. In both cases the hospital provides a service to a patient and is either not compensated at all or is compensated less than what the patient is responsible for under governmental or private insurance plans.

Whether a hospital reports service to a particular patient as charity care or bad debt would not matter for the analysis of differential behavior of for-profit and not-for-profit hospitals if the choice was random. Little hard evidence is available on internal accounting mechanisms and whether systematic differences in reporting of charity care relative to bad debt vary across types of hospitals. There appears to be little doubt, however, that all hospitals have some discretionary opportunities to choose whether to report an uncompensated amount as charity care or bad debt. There is also little doubt that all hospitals have an incentive to report more charity care, as an indicator of their contribution to the community, rather than to report more bad-debt. And there is little doubt that the

pressure on hospitals from donors and regulators to provide more “charity care” has been growing over time—witness the 2006 case in Illinois involving the nonprofit Provena Covenant Medical Center and its loss of state property-tax exemption for providing insufficient charity care. But it is not clear whether these pressures are growing differentially on hospitals of various ownership forms.

Thus, this paper examines a second measure of care for the poor, uncompensated care, which is the sum of reported charity care and bad debt. Anecdotal evidence exists that all types of hospitals are becoming increasingly aggressive in their efforts to collect from uninsured patients with unpaid bills (Lagnado 2003), though the success of those efforts and their effects on hospitals’ reporting practices remain murky.

We turn now to the findings from an investigation of differential uncompensated care between for-profit and not-for-profit hospitals. Table 6 shows regression estimates of differential uncompensated care between for-profit and each of the other forms of hospitals, using the same methodology as described above and reported in table 4.

This alternative measure of service provision to the uninsured poor discloses qualitatively similar effects. In short, there is no apparent evidence of systematic variation between for-profit and not-for-profit hospitals in their reporting of charity care and bad-debt (table 5), although without detailed factual evidence uncertainty remains.

Serving the uninsured poor is not the only form of collective-goods a hospital may provide. We turn next to the provision of research at for-profit and not-for-profit hospitals, and then to provision of education.

Research

Scientific research of the sort that hospitals might engage in is typically “basic,” perhaps benefiting the hospital in its patient care activities, but almost certainly expanding knowledge in ways that benefit the broader health-care system and its patients. Do the subsidized public and nonprofit hospitals engage in more such public-good research than do for-profits?³

Yes and no. As with care for the uninsured poor we find that a hospital’s size is critical in explaining its research expenditures, but not its organization form as such (table 2). Reported research expenditures are very small, however, compared with the reported care for the poor. Charity care and uncompensated care, at all types of hospitals, are more substantial at SNPs and at AHCs (tables 1, A1a, A2a, A3a, A5, A6). Most hospitals report little or no research expenditures. Even at AHCs, which report the most expenditures on research, the level seldom reached \$300,000 per year in constant dollars (table A5), far less than their \$5 million or more of charity care. For-profits engage in essentially none (table A6), which is not surprising insofar as research is privately unprofitable and its provision is neither mandated nor rewarded through any clear political or other constraints.

The regression estimates, controlling for size, again show the importance of distinguishing the influence on collective-good activity of institutional form *per se*—that is, the forces it reflects--and of hospital size, which is correlated with institutional form. Table 2 shows a consistent pattern of statistically insignificant effects of all ownership forms, except for AHCs, and for those hospitals the separate effect of form, apart from size, is generally negative. Were it not for the substantially larger average size of AHCs than of

for-profits, our estimates indicate that AHCs would engage in *less* research than for-profit hospitals do.

Taking into account both a hospital's ownership form and its size, we again find with research, as with care for the uninsured poor, a powerful and dominating effect of the greater sizes of all ownership forms relative to for-profits. In 1996-97, for example, table 2 finds that an average-size AHC, which has 620 beds, would be expected to report research of \$1,300 per bed, or \$629,000 per year, more than an average-size for-profit, which has only 137 beds: $(\$1,300) * (620 - 137)$. In some other years the estimated coefficient on AHC is actually negative, but when the estimated effect of these hospitals' greater size is considered the overall prediction is that an AHC of mean size would devote \$629,000 more to research than a typical for-profit hospital.

Education

Education is the third form of collective good we consider. Table 3 shows a powerful effect of hospital size on this output, as on care for the poor and on research. An additional bed is associated with an additional \$1,000-\$2,000 more education expenditures per year, and with for-profits being over 100 beds smaller, on average, than nonprofits and well over 400 beds smaller than the average AHC, the effects are substantial. An AHC of mean size in 1996-97 is predicted to spend \$2.3 million more on education expenditures than an average for-profit--\$1.3 million, the direct effect of institutional form (column 7), plus $\$2,100 * (620 - 137) = \1.0 million, the indirect effect of institutional form on hospital size and the effect of the larger size on education expenditures. Close to half of the total effect is attributable to AHCs' far larger average size and the causal forces that underlie it.

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Considering all forms of not-for-profits—SNPs, RNPs, publics, and AHCs—we estimate that every one of them is predicted to provide significantly more education expenditures than does an average for-profit. This is so in all years, when size differentials and their effects are considered and when statistically insignificant coefficient estimates are treated as zeros.

Another Test: a Fixed-Effects Model

A fixed effect (FE) model takes advantage of the multiple years of observations for individual hospitals. It adjusts for effects on the dependent variables of unobserved characteristics of each hospital that are unique to that hospital but constant over time. Controlling for those effects, what can be said about differential public-goods provision among hospitals of varied ownership forms? How different are the estimates of public goods provision compared with the cross-sectional estimates reported above?

Before examining the coefficients on size and ownership form in the FE model, limitations on the estimated model should be noted. The data set, while covering 22 years, is quite unbalanced. Most hospitals are not in the data set for all years; indeed, depending on the public-good expenditure variable under consideration, data are available for an average of 4-5 years. Over 20 percent of the hospitals reporting in 1976-77 no longer existed in 1996-97. Some simply closed, a number we do not know, but others disappeared through absorption by another hospital. Some hospitals absorbed others, thereby showing that they probably differed in unobserved ways from those that were acquired, and from those that simply closed. And even though the total number of hospitals decreased, some

entry of new hospitals occurred. The unbalanced sample raises questions of the appropriate interpretation of the FE estimates.

The FE model used the same RHS variables as in the annual OLS equations. (Results are not shown but are available upon request).⁴ The RHS variables are the same as in the annual OLS equations.

The FE estimates are consistent with the OLS equation results in highlighting the importance of a hospital's size for explaining the differential provision of some public-good outputs—specifically, education and care for the uninsured poor, as measured by both bad debt and uncompensated care, but not by charity care, and the magnitudes of effects are comparable. An additional bed is associated with an additional \$5,640 of uncompensated care, \$3,565 of bad debt, and \$425 of additional education expenditure—generally somewhat smaller than the OLS estimates, although those varied over the years. The FE model, however, does not estimate a significant effect of hospital size on charity-care, although the point estimate of \$2,075, while smaller than the OLS estimates for most years, is comparable to the OLS estimates in the later years. The FE model estimated effect of size on research is significantly *negative*, although the magnitude is a modest \$140 per bed.

The FE-model again estimates the general insignificance of hospital form, apart from size. AHCs, however, are associated with increased expenditures on education, \$586,000 per year.

A final robustness check was carried out by estimating an OLS model in which each hospital's size is also allowed to enter interactively with its ownership type. The

purpose was to allow for the possibility that the effect of a hospital's size differs by hospital type. The findings (not shown but available upon request): For education expenditures we find that the effects of size do differ among ownership types. Larger hospital size is associated with significantly more education activity for SNPs, on the order of \$1,500 per additional bed, and for AHCs, on the order of \$3,000 per additional bed. For RNPs the pattern is more variable, with size being associated with greater education expenditures for only 8 of the 21 years in the model that includes AHCs. And for Public hospitals, size is consistently (except for a few years early in the time series) associated with effects on education expenditures that are not significantly different than they are in for-profit hospitals.

When charity care is considered we find that the effect of size, by comparison with its effects on for-profit hospitals, is statistically significant only for AHCs. For those hospitals an additional bed is associated with some \$60,000-\$85,000 more charity care than is reported by for-profit hospitals of the same size. And for research, the effects of greater hospital size is generally larger among SNP hospitals than at for-profits, but not among any other ownership form, including AHCs.

Public-goods provision across hospitals of different ownership forms deserves further study, as it does in other mixed industries such as nursing homes and higher education (Weisbrod, Ballou, and Asch, 2008). The overall finding that a hospital's size is an important influence on its reported provision of medical care for the uninsured poor, education, and research, together with the evidence of major systematic differences in size among types of hospitals, suggest that an organization's size reflects its goals and the constraints on achieving them. These forces are not well understood, but the sizable

differences in size and performance among the public, religious nonprofit, secular nonprofit, and AHC hospitals, all of which are subject to the nondistribution constraint, make clear that differential organization behavior is by no means simply the product of that constraint.



Concluding Remarks

The findings that public-good provision in the forms of care for the poor, research, and education, is greater at public and nonprofit hospitals than at for-profits has complex implications for public policy. The value of the greater outputs of public goods must be determined, and the costs of alternative techniques for expanding their provision must be determined. The property-tax and other tax-system losses from subsidizing hospitals are not trivial. The costs of alternative mechanisms for stimulating public goods outputs need to be better understood before a confident judgment can be reached about the efficiency of encouraging public-good provision through subsidies that are specific to institutional form.

The question of whether organizations of differing ownership type can be expected to differ in their public goods provision is central to developing efficient public policy affecting the development of an industry's institutional structure. Whether the focus is on hospitals, nursing homes, or other providers of health care services, or on schools, day care centers, anti-poverty organizations or any others, understanding whether and how institutional form matters is important.

Which dimensions of differential behavior matter? One type that has received attention involves behavior in forms that consumers find it difficult to observe, for example the extent of "tender, loving care" provided in a nursing home, or the quality of care in a

hospital. Another, examined in this paper, is the organization's provision of collective goods, which, because of their private unprofitability, notwithstanding their social value, are likely to be provided sub-optimally by profit-maximizing firms. We have focused on three types of collective goods that are provided by at least some hospitals—care for the uninsured poor, research, and education. Differential objective functions—missions—and differential constraints, though often not observable directly, would generate systematically divergent levels of these collective-good activities between for-profit and a not-for-profit hospitals. Do for-profits engage in significantly less than do public, secular nonprofit, religious nonprofit, or Academic Health Center hospitals? These hospitals are subsidized in various ways, while for-profit hospitals are not.

The work reported above provides partial answers to the question of whether institutional form matters in hospitals' provision of collective goods, but it also underscores the necessity of clarifying the question. Is the question, for example, (a) whether one type of hospital would alter its public-good production if it were transformed (ted) into another type *but constrained to retain its size (number of beds)*? Or is the question whether public-good production would change if a hospital were transformed into another type *but permitted to adjust its size*, expanding or contracting to, say, the mean size of that type of hospital?

The answers to the two versions of the question differ, as might the answer to some other version of the question being confronted. The focus on size turns out to be extremely important. Whether hospitals of differing ownership form are predicted to behave differently in collective-goods markets *holding constant their size* is not the same question as whether they are predicted to behave differently when their sizes differ, as, for example,

when each is of the average size of its type. An average-sized for-profit hospital has only some 20-25 percent as many beds as an average AHC.

For-profit hospitals report less spending on collective goods than do public or nonprofit hospitals, but that is associated with both their differential sizes and other factors. Both public hospitals and Academic Health Centers (AHCs) report greater charity care expenditures, for example, than do for-profits—in part because they are larger but also because of other forces associated with their being governmental or AHC hospitals.

The importance of the treatment of size can be illustrated: A religious nonprofit (RNP) hospital of mean size for that group, 236 beds, is predicted to provide \$1.2 million per year, in 1996-97, more charity care than a for-profit hospital of *its* mean size, 137 beds. However, if the RNP was of the smaller size it would provide a predicted \$0.7 million more.

The 22 years of data suggest that institutional form does matter in the provision of care for the uninsured poor and in educational activity. There are direct effects of institutional form, controlling for hospital size, and there are effects of differential size. Research, however, is a collective good that is not provided significantly less by for-profits, even when their smaller size is considered. While those hospitals report providing virtually no research, their public and nonprofit counterparts do little more, with the exception of Academic Health Centers.

There is an overall pattern of systematic differences in collective-good activities across institutional forms in the hospital industry. For-profit hospitals generally spend less on charity care, research, and education, than does at least one form of not-for-profit hospital, in large part because of their smaller size. Within the not-for-profit hospital realm

there are also differences. For the two forms of private nonprofits--religious and secular—they, too, engage in more of all three collective-good outputs than do for-profits--and again through forces captured largely by their greater size. Academic Health Centers are especially distinct from for-profits, reporting greater expenditures on all forms of collective goods, and, again, much of the differences is associated with the effects of their greater size. What the underlying forces are, however, that generate the systematically different behavior deserves further study.

The findings of less collective-goods provision by for-profit hospitals does not end the debate over the efficiency of the existing subsidies and tax exemptions received by not-for-profits in the hospital or any other industry. Whatever the social value may be of the additional care for the uninsured poor, the additional research, and the additional educational expenditures by public and nonprofit hospitals, compared with for-profits, it is important to know what the cost would be of providing those increased outputs through other mechanisms such as contracts with individual hospitals rather than through governmental subsidies to all nonprofit and governmental hospitals. The subsidies are not trivial (Nicholson et al 2000). Neither, however, are the costs of writing effective contracts for a hospital to provide specified “amounts” of “charity care,” “uncompensated care,” “research,” and “education,” or of monitoring behavior and enforcing the contracts.

The general finding that for-profit hospitals provide less collective-type services is consistent with a model in which profit-maximizing firms eschew unprofitable activities while public and nonprofit organizations, pursuing broader social goals, do engage in them, utilizing direct subsidies as well as volunteer labor, donations, and other revenue sources.

More evidence is needed on collective-good provision across institutional forms in other mixed industries to identify consistent patterns.

The findings reported here shed light on a number of issues:

(1) It appears that the combination of subsidies, through the tax system, and constraints, through the nondistribution legal constraint and, perhaps, the associated entrepreneurial and managerial sorting, do drive for-profit and not-for-profit hospitals in different directions. For-profits appear to choose smaller size, consistent with a model in which they eschew provision of services unlikely to be profitable, even if efficient from a social perspective.

(2) While the nondistribution constraint applies to all forms of not-for-profits studied—public hospitals, religious nonprofits, secular nonprofits, and academic health centers—other constraints may differ, and missions may also differ, in ways leading to differential behavior in terms of hospital size as well as other respects. We find that the systematic differences in size, especially among public, nonprofit, and AHC hospitals, are associated with sizable differences in provision of public-goods in the forms of care for the poor, research, and education.

(3) The observed differences in public-goods provisions connect with the public policy issue of the efficiency of tax subsidies in the hospital and other mixed industries.

(4) As the use of tax policy to influence public-goods provision is considered, it is important to recognize that the findings reported here are derived from hospitals' own reports—to a California state agency. Over the period studied, there was no explicit incentive structure in place that would seem to cause hospitals of various ownership forms to distort their survey responses differently. That situation, however, is being replaced by stronger rewards that either mandate provision of one or more form of public good, or

services bringing “community benefit,” or that threaten the imposition of penalties for insufficient provision of such services. In the process the financial rewards for reporting higher levels of “charity care” and other public goods are likely to be increasing. The Provena case, discussed above, highlighted the policy-enforcement shift in another state, Illinois, but it certainly suggests that financial, especially in the form of potential loss of property-tax exemption if “enough” charity care is not provided, are becoming stronger.

A Closing Note on Unexpected Consequences of Stronger Incentives

With stronger incentives comes danger that the way hospitals *report* their public good outputs will be distorted in predictable ways. The two-good model illustrates the likely effects of increased legislative and regulatory attention to a not-for-profit hospital’s public good outputs relative to what was termed above its “mission-good” outputs. In this multi-tasking framework, we can expect increasing efforts by hospitals to providing “evidence”—data--of their provision of public goods, especially charity care.

The consequences can be very different from what is intended. Rather than increased real provision of public goods, and especially care for the uninsured indigent, the likely result of pressure on hospitals to provide more public goods—that is, financial incentives--is increased attention to accounting practices and reporting systems. These are likely to be lower-cost ways of showing increased public-goods provision.

The result is that a new “Social Heisenberg Principle” is likely to emerge: When “performance” is costly to monitor, the process of *measuring* it as a basis for *rewarding* it (or penalizing its non-provision), alters the *actual allocation of resources* in socially inefficient ways. Stronger rewards will, in the context of the analytic equivalent of multi-

tasking, shift rewards from uses that would increase *real* performance and to uses that increase *measured* performance.

The Social Heisenberg principle has ramifications far beyond hospitals. In education, for example, it holds for the current debate over the effects of the “No Child Left Behind” law. Indeed, it holds throughout the economy, but particularly in the public and nonprofit sectors, where measuring and rewarding true performance is most difficult and strong rewards most likely to be inefficient.

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Notes

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¹ Illinois state law requires that to qualify for property tax exemption a hospital must provide sufficient charity care, but there is no operational definition of what that is. In a recent case the Director of the Illinois Department of Revenue denied property tax exemption from Provena Covenant Medical Center, holding that charity care of 0.7 percent of total revenues was insufficient to justify the exemption (Duane Morris Alert, 2006). What would be sufficient was not stated.

² In only four of the 21 years do we estimate a statistically significant difference, and those years are divided equally between years of positive (1993-94 and 1996-97) and negative (1986-87 and 1987-88) estimated relationships. However, the two types of hospitals

do differ greatly in mean size, which leads to the expectation that SNP hospitals, given their larger size, will provide significantly more charity care..

³ As with the reporting of charity care and bad debts, what is reported as an expenditure on “research” involves discretionary decisions and accounting practices including, for example, on the allocation of joint costs.

⁴ Another formulation of the model was also estimated in both OLS and FE model form. This added a set of variables interacting size with ownership form, which permitted the finding that size has a different effect depending on ownership form. No strong findings resulted.