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ABSTRACT

This paper offers an empirical test of ownership mix efficiency in the U.S. nursing home industry. We test to compare the benefits of quality assurance with the costs from the attenuation of property rights that result from an increased presence of nonprofit organizations. The empirical results suggest that too few nonprofit nursing homes may exist in the typical market area of the U.S. The policy implication is that more quality of care per dollar might be obtained by attracting a greater percentage of nonprofit nursing homes into most market areas.

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I. Introduction

Since Kenneth Arrow's classic 1963 study "Uncertainty and the Welfare Economics of Medical Care," economists have been interested in why nonprofit organizations are so prevalent in health care markets. As Arrow pointed out, medical care is a highly complex personal service, one for which there exists considerable uncertainty surrounding quality. One hypothesis for the prevalence of nonprofits in healthcare markets is that nonprofit ownership status serves as a signal for quality in the presence of asymmetric information.

Hansmann (1980) has shown that nonprofit organizations face a non-distribution constraint because they cannot legally distribute any of their residual earnings. Nonprofit organizations must dispense all residual earnings for the express educational, charitable, or religious purposes for which they were formed. Thus, the non-distribution constraint implies nonprofit organizations face little financial incentive to compromise the quality of care they provide. This is in contrast to for-profit organizations, which clearly have financial incentives to engage in opportunistic behavior, such as skimping on the quality of care they provide, when consumers are imperfectly informed. Consequently, economic theory suggests that an isolated nonprofit healthcare organization may offer higher levels of quality than an otherwise comparable for-profit organization.[1]

However, given the possible attenuation of property rights caused by the non-distribution constraint, economists are quick to point out that nonprofit organizations are also likely to face a more severe principal-agent problem. In particular, the absence of a residual claimant with a financial interest in the organization means that

no one individual, or group of individuals, has strong incentives to monitor the behavior of the organization. Therefore, in a nonprofit healthcare organization, the divergence between the interests of the principal(s) and the agent(s) often leads to the inefficient production and provision of medical care services. This is because unconstrained managers of nonprofit organizations will be more inclined to pursue personal goals and objectives, which are likely to conflict with minimum cost production, *ceteris paribus*. Thus, property-rights theory predicts that, in isolation, a nonprofit healthcare organization will produce at higher costs than an otherwise comparable for-profit organization.[2]

While theory tends to be unambiguous in predicting that an "isolated" nonprofit organization will produce medical care with higher quality and production costs than an otherwise similar for-profit organization, both Hirth (1999) and Grabowski and Hirth (2002) have pointed out that nonprofit and for-profit organizations rarely operate in isolation; in fact, they often compete against one another. Consequently, they hypothesize that competitive spillovers from nonprofits will lead to a higher quality of care in for-profit nursing homes. In support of their theory, the researchers find empirical evidence that an increase in nonprofit market share improves for-profit, and overall, nursing home quality.

Grabowski and Hirth (2002), and much earlier, Tuckman and Chang (1988), note that competitive spillovers from for-profits may influence the behavior of nonprofit nursing homes.[3] They argue that competition from for-profit organizations may limit the inefficiency of nonprofits. Inefficiency is limited because nonprofits have to be more concerned with the costs of producing medical care when facing competition

from the more cost conscious for-profit organizations. Grabowski and Hirth conclude (p. 19) that 'If non-profits have a competitive advantage in "trustworthiness" while for-profits have greater incentives for efficiency, intersectoral competition can yield better outcomes than a market consisting exclusively of one type of firm.'

Based upon the notion that a mix of for-profit and nonprofit organizations may promote societal well being, this paper develops and conducts a unique empirical test to assess the efficiency of the ownership mix in the typical nursing-home market. As previously discussed, the existence of both nonprofit and for-profit nursing homes in a single market area can be expected to generate both social benefits and costs. By empirically estimating the relationship between the nonprofit (or for-profit) market share and nursing home care utilization, we can infer the net social benefit of additional nonprofit facilities. We discuss this in the next section of this paper and also explain how we plan to conduct the empirical test. Section III describes the data and sample used in the empirical analyses. Section IV presents the empirical findings and the last section offers conclusions.

II. Conceptual Model

The approach we use to test for the efficient mix of for-profit and nonprofit nursing homes in a geographical market is derived from Svorney (1987). Svorney examined the role of professional interests in establishing physician licensure. She argued that physician licensure potentially raises costs through higher wages because it acts as an entry barrier, but, she emphasized, it may also provide greater benefits in the form of quality assurance. The ultimate test of the efficiency of professional licensure, she

argued, depends on whether or not the favorable demand response outweighs the undesirable supply response. For example, if the benefit of quality assurance causes demand to increase (i.e., shift the demand curve to the right) more than higher wages cause supply to decrease (i.e., shift the supply curve to the left), then the utilization of physician services increases, and this reflects the net social benefit that physician licensure offers.[4] Hence, one may observe the impact of a regulation (or type of institution) on the utilization of a particular good or service, and from that draw an inference about its effect on economic efficiency.

In a similar vein, the efficiency of a *mix* of health care organizations with different ownership forms may be analyzed in this manner. For example, and in the context of our research, suppose we are comparing two similar nursing home markets that differ in the following respect: market area "A" is completely dominated by for-profit facilities whereas market area "B" is characterized by an equal distribution of market shares across for-profit and nonprofit facilities. A graphical exposition of this comparison is presented in figure 1 for a competitive marketplace.

[INSERT FIGURE 1 ABOUT HERE]

The curves D_A and S_A represent the demand and supply for nursing home care in market A (where for-profit facilities completely dominate). Notice that Q_A measures the market clearing quantity of nursing home care in market A.

Given the different mix of ownership structures, the markets are likely to differ in two principle respects, ceteris paribus. First, there will exist a greater demand for nursing home care in market area B because of the increased quality assurance resulting directly (or indirectly) from the greater prevalence of nonprofit nursing

homes. The greater quality assurance is captured by demand curve D_B in figure 1. Second, the supply of nursing home care may be lower in area B because of the higher production costs resulting from the diminished property-rights incentives from more nonprofit nursing homes operating in the market.[5] Higher production costs are reflected in supply curve S_B in figure 1. Because the demand (quality assurance) effect is assumed to be stronger than the cost effect in our example, the equilibrium quantity of nursing home care, Q_B, is greater in market B than market A.

Whether or not the demand effect more than offsets the supply effect in the typical U.S. nursing home market is an empirical question that can be tested using multiple regression analyses. The test can be conducted by observing the impact that nonprofit (or for-profit) market share has on nursing home care utilization, while carefully controlling for a host of other supply and demand factors. Equation 1 represents the general reduced-form model used in the forthcoming statistical estimations. In equation 1, Q_i represents the equilibrium quantity of nursing home care in market *i*; NPS_i represents the market share held by nonprofit nursing homes in market *i*; D_{ji} is a vector of *j* additional variables that are expected to influence the demand for nursing home care in market *i*; and S_{ki} is a vector of *k* additional variables hypothesized to affect the supply of nursing home care in market *i*. The error term, μ_i, is assumed, for now, to be independent and normally distributed with constant variance and a mean of zero (constant terms and/or fixed effects in equation 1 have been suppressed for algebraic convenience).

$$Q_i = \beta_0 NPS_i + \beta_1 NPS_i^2 + \sum_{n=1}^{j} \gamma_n D_{in} + \sum_{n=1}^{k} \gamma_{j+n} S_{in} + \mu_i \qquad (1)$$

The hypothesis is that the nonprofit share exerts an inverted U effect on the utilization of nursing home care as illustrated in Figure 2. The general idea is that both the marginal benefits of quality assurance and marginal costs associated with the attenuation of property rights depend in part on the relative amount of nonprofit organizations in a market area. For example, the marginal benefit of increased quality assurance is likely to decline as a greater percentage of nonprofit nursing homes locate in a market area. That is, the same marginal improvements in quality become increasingly more difficult to achieve or squeeze out. Similarly, the marginal costs associated with diminished property rights incentives may increase with respect to a greater percentage of nonprofit nursing homes in a market area, especially if a medical arms race ensues from greater nonprofit activity. For instance, nursing home may compete through cost-enhancing nonprice means such as superfluous amenities.

[INSERT FIGURE 2 ABOUT THERE]

Figure 2 allows for diminishing marginal benefits and increasing marginal costs from the increased presence of nonprofit organizations. Notice as the nonprofit share increases from 0 to NFP*, utilization increases because the marginal benefits of quality assurance initially outweigh the marginal costs resulting from the attenuation of property rights. However at higher values of the nonprofit share the converse holds such that marginal costs exceed marginal benefits. Hence the coefficient estimates on the linear and squared NPS terms are expected to be positive and negative, respectively. Given the nonlinear specification, we can solve for the optimal mix of nonprofit (and for-profit) nursing homes and compare it to the actual mix for a representative market area.

III. Data and Empirical Test

Data were gathered for each of the 2,939 nursing home markets in the U.S. to test our ownership-efficiency hypothesis. In our test, the county was assumed to be a reasonable approximation for the relevant geographical market for nursing home care. Ample precedent supports the county as a proxy for the relevant geographical market in the nursing home industry (e.g., Nyman, 1985; Cohen and Spector, 1996; Grabowski and Hirth, 2002; Gulley and Santerre, 2003). The data used in our empirical analyses are for the year 1996 and come from five different sources. Table 1 reports the mean value, standard deviation, and data source for each of the variables used in our empirical analyses.

[INSERT TABLE 1 ABOUT HERE]

The conceptual model indicates that a measure of nursing home care utilization, or quantity, Q_i, is necessary to conduct the test. We experimented with several measures of utilization, and they all produced highly similar results. The first measure we employed was the number of nursing home residents in the market area, expressed both as a fraction of the total population and as a fraction of the total number of individuals aged both 65 years and older and 85 years and older. Ratios were used to directly control for population differences across market areas. The second utilization measure used was the number of nursing home beds, also expressed as a fraction of both the total population and the total number of persons aged both 65 years and older and 85 and older. Due to the high degree of similarity in the findings generated by the various dependent variables, we only report the multiple regression results from models that employed nursing home residents per capita as a measure of utilization.

The primary focus of our paper is on the impact of ownership mix on efficiency in the nursing home industry. As a result, the aggregate market share of nonprofit nursing homes is specified in the regression model to capture the different degrees of competitive spillovers in the various nursing home markets. Theoretically, the market share of nonprofit nursing homes may be endogenous. For example, residents may be drawn to nonprofit nursing homes because managers set aside extra beds and charge lower prices in pursuit of the personal utility derived from operating larger organizations (e.g., Newhouse, 1970). As a result, we tested if the nonprofit share was endogenous.

Following Grabowski and Hirth (2002), the instrument used to test for the endogeneity of the nonprofit nursing home market share is the nonprofit share of *hospital* beds in 1986.[6] In their study, Grabowski and Hirth make a compelling theoretical and empirical case for this particular instrument. Theoretically, they argue that the lagged value of the nonprofit hospital market share serves as a plausible instrument because it captures those areas that have historically been more favorable for the development of nonprofit health care organizations. In addition, the relative share of non-profits in different parts of the country may be deeply rooted in historical factors such as the age of the city and different patterns of voluntarism and charitable provision that have little to do with the advanced technology and prevalence of third party payment that characterize the current health care environment (e.g., see Stevens (1989) for a history of the organizational structure of the U.S. hospital industry). Grabowski and Hirth's statistical analysis provided strong support for the suitability of the lagged hospital market share as an instrument. Using the instrument discussed above, we employed the Hausman test of

exogeneity. The test failed to reject the null hypothesis of the exogeneity of the nonprofit market share.

As previously mentioned, we must also control for other factors that could result in utilization differences across market areas, in an effort to isolate the impact of ownership mix on efficiency. Otherwise, the omission of variables that are correlated with both ownership mix and the number of residents could lead us to draw incorrect inferences from our empirical results. Following the conceptual model, these other influences are broken down into the aforementioned demand-side variables, D_j and supply-side variables S_k. The demand-side variables affecting nursing home care utilization include: population (in logs), population density, the median income (in logs), the poverty rate, the percentage of the population aged 65 years and older, the percentage of the population aged 85 years and older, the percentage of the population that is white, the percentage of the female population unemployed, and the percentage of the female population divorced.

These demand-side variables are intended to control for differences in the willingness and ability to pay for nursing home care across market areas. Except for a few, the rationale for including most of these demand-side variables should be self-evident. The female unemployment and divorce rates are intended to capture the availability of informal care outside nursing homes. The supply-side variables are intended to capture relative differences in the costs of providing and the willingness to offer nursing home care across the various market areas. As such, they include: the CMS area wage index (in logs), a dummy variable denoting the existence of a Certificate of Need law in the state, a dummy variable denoting the presence of a nursing facility construction moratorium in

the state, and a set of variables capturing the level and type (e.g., retrospective, case-mix adjusted, etc.) of Medicaid reimbursement in the state. We also estimated models using state fixed effects in place of these largely state-specific variables.

We experimented with several different specifications involving our dependent variable, nursing home residents per capita, and the independent variable of interest, nonprofit market share. A linear specification and a specification involving a logistic transformation of residents per capita proved to be fairly representative of the various results obtained. The logistic transformation adjusts to some degree for the skewed leftward distribution of the number of nursing home residents per capita. White's test (1980) identified the presence of heteroscadasticity so the estimates in our models have been corrected so that they are heteroscadastic-consistent (following his procedure).

IV. Empirical Results

Ordinary least square (OLS) estimates are reported for four specifications in table 2. The first two columns report the OLS results for the linear model and the model involving a logistic transformation of the dependent variable without state fixed effects. The last two columns report our OLS results for the same specifications, but with state fixed effects replacing the state-level variables. Each independent variable's coefficient estimate and its corresponding t-statistic (in absolute terms) shown in parentheses are reported in the table.[7]

[INSERT TABLE 2 ABOUT HERE]

The results for the control variables are fairly consistent across specifications. Some results are worth pointing out. First, the logistic transformation appears to provide a

better fit to theory. Economic theory suggests that market output declines in response to a supply decrease resulting from such factors like higher wages. Because production is very labor intensive, one would expect such a relationship to hold in the nursing home care industry. Notice that the prediction of supply theory is supported by the specification involving the logistic transformation of the dependent variable given the negative and statistically significant coefficient estimate on the CMS area wage.

Second, the positive and statistically significant coefficient estimates on the CON law and moratorium dummy variables in the specifications involving no state fixed effects are interesting in terms of their implication. CON laws are typically viewed as creating an entry barrier and thereby leading to a reduction of market output. Our results lend no support for this monopoly theory behind CON laws. Lastly, the positive and statistically significant estimated parameter on the Medicaid reimbursement rate agrees with the predictions of the dual market model and a recent study by Gulley and Santerre (2003).

Recall that our conceptual model hypothesizes an inverted U-relationship between the nonprofit share and residents per capita. As anticipated, the nonprofit market share does exert an inverted U impact on the quantity of nursing home care in all four specifications. Moreover, according to the results, the optimal share of nonprofit homes ranges from roughly 42 to 46 percent of all nursing homes (shown at the bottom of the table).

Table 3 shows the distribution of the actual nonprofit market shares in the 2,939 market areas. On average the nonprofit market share equals 23 percent with a median value of nearly 7 percent. According to the table, the nonprofit market share is below 20 percent in nearly 61 percent of the market areas. An additional 15 percent of all market areas are characterized by a nonprofit market share lying somewhere between 20 and 40

percent. Thus, if our specification and empirical findings are correct, efficiency - in terms of quality of care per dollar - could be significantly improved in a large percentage of the market areas by changing the ownership of nursing homes from for-profit to not-for-profit status. A change in the ownership of nursing homes from not-for-profit to for-profit status would also have to occur but only in less than 22 percent of all market areas.

These results are certainly intriguing because they suggest ownership conversion may be necessary in the nursing home industry to bring about increased efficiency. At the same time, the results are not surprising given the attention paid to allegations of inferior quality of care in the nursing home industry (Institute of Medicine, 2001). Interestingly, a 70 percent nonprofit market share characterizes the hospital industry but we cannot be certain if that figure represents the efficient mix. Why market forces have not naturally resulted in more nonprofit nursing homes remains a mystery. Noncompetitive factors such as the presence of third party payers and CON laws may provide some explanation for the underallocation of nonprofit organizations to the nursing home industry (Lakdawalla and Philipson, 1998). Future studies are certainly needed to sort out the real reason behind this observed inability or unwillingness of nursing home markets to make the necessary correction.

V. Conclusion

This paper offers a test of the efficiency of the ownership mix in nursing home markets across the U.S. When consumers lack sufficient information about nursing home quality, the general notion is that nonprofit organizations generate societal benefits by offering (and signaling) quality assurance, but they may simultaneously result in higher production costs because of less attention devoted to efficiency. The opposite scenario

holds for for-profit organizations. Thus, a mix of ownership types in the marketplace may keep quality and costs under control as a result of competitive spillovers.

In this study we proposed that the efficiency of the ownership mix might be inferred by viewing how the ownership mix affects utilization through the use of multiple regression analyses. Our empirical results suggest that too few nonprofit nursing homes characterize the typical nursing home market (county) of the U.S., at least in 1996. As a result, greater quality of care per dollar could be achieved by encouraging more nonprofit nursing homes in most market areas of the U.S. Local and state policy makers may want to offer inducements such as zoning waivers and construction bond subsidies to attract more nonprofit nursing homes into their areas.

Other studies following this approach are warranted, however, before any general conclusions may be drawn about the efficiency of the overall mix of nonprofit and for-profit organizations in other healthcare industries such as hospital services or dialysis services. Also, our approach may be relevant for testing the efficiency of ownership mix in other sectors of the economy. For example, a mixture of ownership forms exists in the education services and utility industries and also in the local public sector (e.g., refuse collection). By following our approach, researchers will be able to determine if competitive spillovers among ownership forms take place and to what degree a particular ownership form is underrepresented from a societal perspective. We encourage others to explore the efficiency of ownership forms in other sectors of the economy in the U.S. and in other countries.

Figure 1:

Impact of Nonprofit Organizations in a Market Area

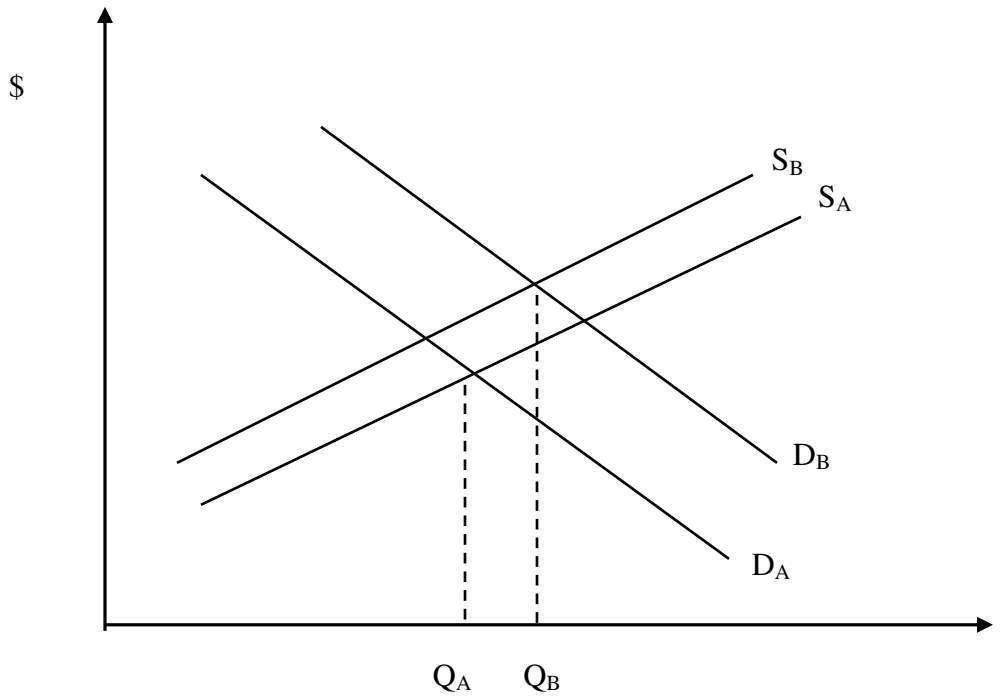

Figure 2: The Optimal Mix of Non-profit and For-profit Nursing Homes

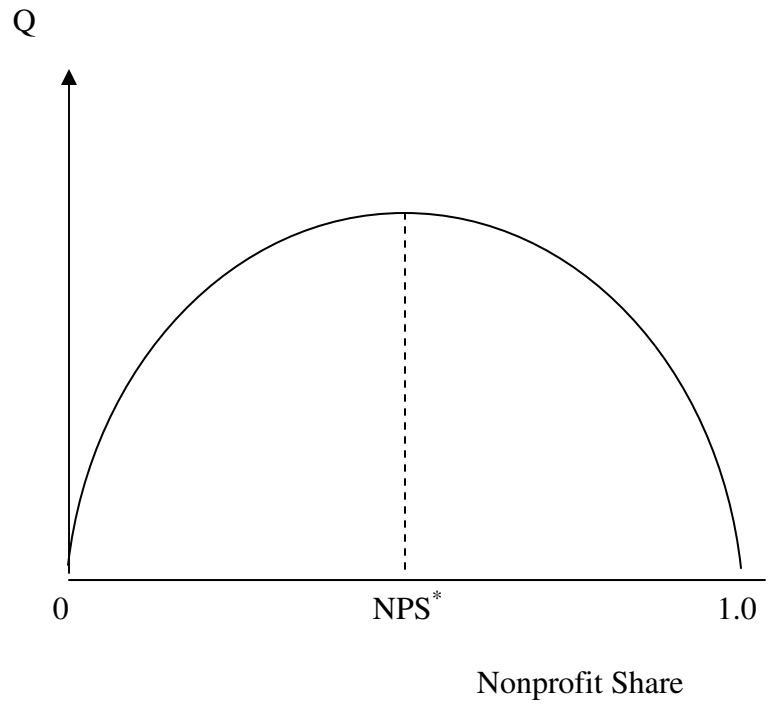

Table I. Descriptive Statistics

Variables	Mean	S.D.	Source
Residents per capita	0.009	0.008	1995-1996 Online Survey, Certification and Reporting (OSCAR)
Log population	10.311	1.314	2003 Area Resource File (ARF)
Population density	220.92	43.83	2003 Area Resource File (ARF)
Median county income	$19,286	$4,400	2003 Area Resource File (ARF)
Female divorce rate (interpolated 1990, 2000)	0.089	0.020	2003 Area Resource File (ARF)
Female unemployment rate (interpolated 1990, 2000)	0.058	0.027	2003 Area Resource File (ARF)
Proportion of population that is white	0.839	0.180	2003 Area Resource File (ARF)
Proportion of population in poverty (1997)	14.91	6.10	2003 Area Resource File (ARF)
Log of CMS wage index	$8,265	$1,235	The Centers for Medicare and Medicaid Services (CMS)
Proportion of Pop. 65 and older (interpolated 1990, 2000)	0.149	0.042	2003 Area Resource File (ARF)
Proportion of Pop. 85 and older (interpolated 1990, 2000)	0.018	0.008	2003 Area Resource File (ARF)
Nonprofit market share	0.231	0.309	1995-1996 Online Survey, Certification and Reporting (OSCAR)
Certificate of need law	0.723	0.447	Harrington et al., 1998
Moratorium	0.350	0.477	Harrington et al., 1998
The average Medicaid rate in the state	80.58	18.64	Harrington et al., 1998
Hospital facilities reimbursed differently	0.140	0.347	Harrington et al., 1998
Retrospective reimbursement system	0.028	0.164	Harrington et al., 1998
Combines prospective and retrospective systems	0.102	0.303	Harrington et al., 1998
Allows rate adjustment upward during or after rate period	0.480	0.500	Harrington et al., 1998
Employs case-mix reimbursement	0.556	0.497	Harrington et al., 1998
Nonprofit share of hospital beds in 1986	0.467	0.448	American Hospital Association (AHA)

Table 2: Multiple Regression Results

Model Specification & Statistics	Linear	Logistic Transformation of Dependent Variable	Linear With State Fixed Effects	Logistic Transformation Of Dependent Variable with Fixed Effects
Constant	-0.030	-0.816	-0.020	-2.33
	(3.27)	(0.80)	(1.56)	(1.96)
Nonprofit Share	0.010	1.13	0.009	0.983
	(7.98)	(13.3)	(8.05)	(11.9)
Nonprofit Share Squared	-0.011	-1.29	-0.011	-1.18
	(7.60)	(13.0)	(8.21)	(12.2)
Population (in logs)	-0.003	-0.172	-0.002	-0.145
	(5.86)	(9.59)	(4.83)	(8.02)
Population Density	8.42E-08	0.00002	1.37E-08	0.00002
	(0.81)	(1.62)	(0.09)	(1.21)
Median income (in logs)	0.005	0.311	0.003	0.158
	(2.87)	(3.88)	(1.82)	(2.03)
Percent females divorced	0.010	0.582	0.020	1.77
	(0.99)	(0.87)	(1.47)	(2.35)
Percent females unemployed	0.008	0.135	0.016	1.28
	(1.05)	(0.20)	(2.37)	(2.06)
Percent of population white	-0.003	-0.043	-0.0006	0.024
	(2.32)	(0.51)	(0.36)	(0.27)
Poverty rate	0.00004	-0.0009	-0.00002	0.0007
	(1.98)	(0.51)	(1.30)	(0.42)
Percent of pop > 65	-0.061	-3.08	-0.050	-1.58
	(7.94)	(5.97)	(5.69)	(2.89)
Percent of pop > 85	0.708	58.25	0.718	51.12
	(15.9)	(20.4)	(12.3)	(17.6)
CMS area wage (in logs)	0.0005	-0.713	0.0006	-0.427
	(0.51)	(6.68)	(0.42)	(3.09)
Presence of CON Law	0.001	0.133		
	(3.13)	(6.34)		
Presence of const. moratorium	0.0005	0.070		
	(2.85)	(4.22)		
Medicaid rate	0.00007	0.0005		
	(3.05)	(4.55)		
Hosp. reimbursed differently	-0.001	-0.073		
	(1.80)	(2.09)		
Retrospective reimburs. system	-0.008	-0.166		
	(1.00)	(3.94)		
Combined retrospective and prospective reimbursement	0.001	0.021		
	(1.73)	(0.61)		
Allows rate adjustment	-0.001	-0.160		
	(6.00)	(9.37)		
Case-mix Reimbursement	0.0004	-0.042		
	(1.01)	(1.97)		
Optimal Value	0.460	0.438	0.425	0.418
Adjusted R^2	0.396	0.572	0.482	0.650

Table 3

Tabulation of NFPSHARE
Sample: 1 2939
Included observations: 2939
Number of categories: 6

Value	Count	Percent	Cumulative Count	Cumulative Percent
[0, 0.2)	1786	60.77	1786	60.77
[0.2, 0.4)	455	15.48	2241	76.25
[0.4, 0.6)	309	10.51	2550	86.76
[0.6, 0.8)	127	4.32	2677	91.09
[0.8, 1)	34	1.16	2711	92.24
[1, 1.2)	228	7.76	2939	100.00
Total	2939	100.00	2939	100.00

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Endnotes

[1] For example, Chou's (2002) empirical results support the theory that for-profit nursing homes practice opportunistic behavior and sacrifice quality of care for more profits when asymmetric information exists.

[2] Nyman and Bricker (1989) were among the first to use data envelopment analysis to show that nonprofit nursing homes produce with higher costs than otherwise similar for-profit nursing homes.

[3] In recent work by Kessler and McClellan (2002) examining the hospital market, areas with a stronger presence of for-profits have 2.4% lower overall expenditures, but virtually the same patient outcomes.

[4] Svorney finds empirically that physician licensure leads to a reduced consumption of physician services. That is, physician licensure increased entry costs (supply) by more than it increased consumer benefits from quality assurance (demand). Thus her results provide support for the special interest theory of physician licensure.

[5] Nonprofit organizations also result in lost tax revenues as pointed out by Lakdawalla and Philipson (1998). More tax revenues will be lost in less competitive market areas. Hence we control for the competitiveness of the nursing home market with a number of factors as explained later.

[6] Grabowski and Hirth also specify the growth of the elderly population for the 5-year period from 1991 to 1996 as an additional instrument. Given that our dependent variable is the number of residents, this instrument is much less ideal that the lagged nonprofit hospital share.

[7] Similar results are obtained when all markets areas with a nonprofit market share of 100 percent are eliminated from the analysis. In some earlier work, we also controlled for several other factors including the number of doctors and hospitals per capita, the number of nursing homes per capita, the Herfindahl-Hirschmann index of the market concentration of nursing homes, the percentage of nursing homes that were hospital based and in a chain, and the percentage of residents requiring assistance with daily living activities. The empirical findings from the multiple regression equations that include these variables support the general conclusions of the paper as presented. Including these variables, however, conflicts with our intention of estimating a reduced form model.