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An Examination of the Presence of Ownership Effects in Mixed Markets

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Abstract

Whether consumers perceive for-profit, nonprofit, and government outputs to be perfect substitutes has implications for understanding the social value of nonprofit and governmental producers in the marketplace. While theoretical arguments have been made in support of and against the existence of ownership effects, little empirical research has been conducted to measure their presence. This study examines data from the Wisconsin nursing home industry from 1984 through 1995 and concludes that ownership effects exist, with consumers indicating the greatest preference for nonprofit homes and the least preference for government homes, ceteris paribus. This result is robust to different specifications.

I. Introduction

A multiplicity of competing ownership types characterizes several large industries in the U. S. economy, including hospitals, education, long-term care, day care, and various social services. While traditional for-profit firms sell outputs in all of these industries, a consumer living in a mixed market—in which more than one ownership type competes for business—also has the option of buying from either private nonprofit or government producers. The extent to which consumers perceive the outputs of for-profit, nonprofit, and government organizations in these mixed markets to be close substitutes is unclear, however. Simply observing that a market is mixed is insufficient to conclude that ownership type is irrelevant: While perfect substitutability among outputs across ownership types is consistent with the long-term coexistence of multiple types, such an outcome would also prevail if different ownership types were able to establish and successfully defend separate niches in the product space. In this latter scenario, ownership effects—defined here as a systematic consumer preference (or distaste) for the outputs of particular ownership types—are present; in the former they are not. Understanding which explanation is correct would contribute to our understanding of the social value of the availability of nonprofit and government alternatives in the market. This study strives to answer the question of whether measurable ownership effects do indeed exist by examining data from the nursing home industry in Wisconsin.

For the purposes of this paper, I adopt definitions of ownership types that are standard in the literature. The for-profit firm is defined as any member of the set of sole proprietorships, partnerships, and corporations that are subject to federal taxation, in accordance with the Internal Revenue Code; the government firm is any firm that is controlled and operated by a federal, state, or local government; and the nonprofit firm is any organization that is subject to section 501(c)(3) of the Internal Revenue Code. The primary implications of these differences in definition are financial. In recognition of the perceived social value of nonprofit outputs, the federal government does not tax the income that nonprofits earn in the pursuit of their stated missions. Nonprofits are often exempted from local property taxes as well. At the same time, the Internal Revenue Code requires nonprofits to reinvest their profits in their operations; they are not permitted to distribute them to either outside parties (e.g., shareholders) or inside parties (e.g., managers).

This stipulation has come to be known as the nondistribution constraint. Thus, while for-profits can finance investment, expansion, and other capital needs through stock offerings, the nondistribution constraint effectively bars nonprofits from participating in the equity markets. Nonprofits are eligible to receive donations, however, which are tax deductible to the donor; these organizations thus have access to an alternative pool of "equity" capital. Moreover, nonprofits have an advantage when financing capital needs out of earnings, which are taxable to for-profits but not generally taxable to nonprofits.[1] Like the nonprofits, government firms lack access to equity markets, but, unlike the nonprofits, they have access to tax revenues to finance operations.

The practical effect of these legal and financial differences on production decisions and outputs is unclear. The lack of access to equity markets may not significantly raise the typical nonprofit's cost of capital above that of a comparable for-profit,[2] and while governments do have broad powers to tax and borrow, the extent to which they can do so will be limited by the preferences of voters. Nevertheless, government firms do appear to face especially soft budget constraints, in that they can lose money in larger quantities and over longer periods of time without exiting the industry than private firms can. As a consequence government firms have weaker incentives to allocate inputs and resources to their most productive uses than do otherwise comparable private firms (Shleifer 1999). Moreover, Alchian and Demsetz (1972) contend that nonprofit organizations, as a consequence of the nondistribution constraint, also lack the ability to provide strong incentives to management and thereby encourage efficient behavior.

Even if the differential financial constraints influence relative efficiency levels and the mix of inputs used by the different ownership types, these differences alone do not necessarily imply that, for example, a nonprofit and an otherwise identical for-profit will produce different *outputs*. If the outputs of the three different ownership types are perfect substitutes, then one might find it difficult to justify the substantial subsidies and tax revenues that are directed toward nonprofit and government firms, respectively, especially if these ownership types operate less efficiently than for-profits do. If consumers show a systematic preference for outputs that are not for-profit, however—i.e., if ownership effects favoring nonprofit and government firms are present—this would suggest that any cost in lost operating efficiency is at least partially

compensated by the gain in output variety provided by the presence of these ownership types in the market. Indeed, nonprofit and government firms could potentially provide a net increase to welfare by providing outputs that consumers demand and yet for-profit firms cannot profitably produce. Thus, a natural approach to studying the substitutability of outputs across ownership types is to analyze consumer demand for those various types within the framework of a differentiated products industry.

While theorists have offered rationales for the existence of ownership effects (discussed in the next section), relatively little research has actually attempted to measure their presence. This paper examines data from the Wisconsin nursing home industry, from 1984 through 1995, and asks whether prospective residents value a nursing home's ownership type when deciding which nursing home to enter. This is a natural industry to study in that mixed markets are common.[3] Thus, the typical consumer of nursing home care in the state of Wisconsin can choose between two or more different ownership types, even if the consumer's preferences over locations are fairly specific. The analysis focuses on private payer residents, who are most likely to be able to choose freely among nursing homes, as explained in the third section of the paper. I estimate two types of models. The first is a nested multinomial logit model with instruments, in which the model specification is derived from the underlying utility functions of prospective nursing home residents. The second is a reduced form two-stage least squares model that accounts more explicitly for potential differences across ownership types in capacity and nursing home preferences over which residents to admit. The various specifications estimated here consistently yield results that indicate the presence of ownership effects. Specifically, the results suggest that consumers prefer nonprofit nursing homes to for-profit facilities and for-profits to government facilities, other things equal.

The remainder of the paper is organized as follows: The second section discusses the role of ownership effects in the context of the mixed market. The third section outlines the model and empirical strategy. The fourth section describes the data. Results and discussion follow in the fifth and sixth sections, respectively.

II. Ownership effects and the mixed market

Ownership effects exist whenever consumers reveal a systematic preference for the outputs of certain ownership types over those of others. Such effects may exist for one of three different reasons: First, consumers may value ownership type in and of itself. Second, consumers may value ownership type as a signal of nonverifiable product attributes. Finally, verifiable and systematic product differentiation may exist across ownership types.

An example of valuing a given ownership type because of itself would be "buying from a nonprofit because it is a nonprofit." In such a case, the product that one buys may be no different from the product that one could buy at a for-profit—and the buyer realizes this—but the buyer may identify with the mission of the nonprofit and desire to support it by buying nonprofit outputs. That is, support for the nonprofit's mission-related activities enters into the buyer's utility function. Implied here is the buyer's belief that the organization will use the proceeds of the output sale to cross-subsidize mission-related activities. This story may be most plausible when small purchases are involved. Thus, a buyer may choose to purchase cookies from the Girl Scouts instead of purchasing similar cookies from the supermarket. It is unlikely that this explanation of ownership effects applies to the purchase of nursing home care, however. Nursing home care is a major and, for private payers, expensive decision, and the choice of nursing home will ultimately influence the prospective resident's subsequent quality of life. In such circumstances, it is highly likely that the desire to maximize the resident's physical and emotional health and comfort will dominate any desire to use the purchase of nursing home care as a form of mission support.

An ownership effect may also reflect the value of any signal associated with the corresponding ownership type. Consider the negotiation between a buyer and a seller over the price and quality of an output for which quality is nonverifiable. Under such circumstances, a consumer may be reluctant to purchase from a for-profit producer, who has an incentive to contract for the production of one level of quality but ultimately deliver an inferior quality that costs less to produce. If the output is highly nonstandardized and infrequently purchased—such as in the health care and long-term care industries—reputation effects may be insufficient to discipline for-profit firms. Nonprofit and government organizations, however, are bound by nondistribution constraints, which prohibit them from distributing their profits, thereby attenuating their

profit incentives and the associated incentive to cheat their customers. For this reason, researchers have hypothesized that consumers may prefer to purchase from nonprofit or government producers when quality is nonverifiable (Hansmann 1980, Easley and O'Hara 1983, Weisbrod 1988, Glaeser and Shleifer 2001).[4] Thus, data that imply a consumer preference for nonprofit or governmental outputs may reflect a perception that these ownership types will provide higher nonverifiable quality. That is, ownership type could represent to the consumer a signal of nonverifiable quality. If so, then the size of ownership effects that favor nonprofit and governmental organizations will measure the value of nonverifiable quality that the consumer expects to receive at these ownership types.

A third possibility is that for-profit, nonprofit, and government firms engage in systematic product differentiation across ownership types, in which case ownership effects reflect consumer preferences over this differentiation. Such differentiation may occur as a result of differences in cost structures, with a wider variety of potential profitable outputs available to lower cost ownership types. For example, if nonprofits have lower costs as a consequence of the subsidies and tax exemptions that they receive, then they may be able to provide certain types of products that for-profits could not profitably produce.

While economists have advanced theoretical arguments in support of the existence of ownership effects, there are at least two arguments against their existence. First, when comparing otherwise identical outputs, consumers may not be aware of the ownership types that produced them. If consumers do not know the ownership type at the time of purchase, they will purchase randomly across ownership types, and no significant ownership effect will be observed. Evidence from Mauser (1993) suggests that many consumers are not aware of the ownership type from which they purchase. In the nursing home industry, such reasoning is particularly compelling, since in many cases prospective residents are in poor physical and mental health and find it difficult to process information and make rational decisions (Fraundorf 1977). Moreover, many prospective residents lack agents (such as family members) to assist them with these decisions.

A second argument against the existence of ownership effects is that consumers may not care about ownership type, even if they are aware of it. They may believe, for example, that they can measure, contract on, and verify output quality sufficiently well that they do not need to rely on the signal that ownership type

might send. In other words, information asymmetries and the attendant contracting problems may be less severe than much of the literature on nonprofit organizations presumes. To the extent that consumers view ownership type as irrelevant, one would not expect the data to reveal any significant ownership effects.

Given that theory provides arguments both for and against the existence of ownership effects, the question of whether they exist calls for empirical evaluation, and yet I am aware of very little research that investigates the extent to which ownership effects actually exist.[5] The issue is nonetheless important: Whether ownership effects exist has implications for the social value of nonprofit and government ownership types. The existence of positive ownership effects would suggest that nonprofit and government firms produce and sell outputs that are demanded by consumers but not offered by for-profits. This in turn suggests a welfare-enhancing role for these organizations. The absence of ownership effects, however, may reflect the irrelevance of ownership type, which would call into question the value of the substantial subsidies and tax dollars used to support nonprofit and government enterprises, respectively, in mixed markets. A third possibility is that nonprofit and government firms improve consumer welfare in ways that consumers do not recognize and which are therefore not captured in measured ownership effects.[6] Thus, while an empirical analysis that documents the presence of ownership effects may lend support to the notion that the presence of nonprofit and government firms increase welfare, a finding of no ownership effects would be less conclusive. Even so, a finding of no ownership effects would still be informative in that it would cast doubt on theories of the signal value of ownership type.

As an additional consideration, it is possible that a measured nonprofit ownership effect is actually a *religious* nonprofit ownership effect. That is, since many nonprofits have religious affiliations, the finding of a positive ownership effect for nonprofits may reflect a sense of trust that emanates less from the presence of the nondistribution constraint than it does from the organization's religious values. The various models estimated below consider this possibility explicitly.

III. Industry description and data

Nursing home care

Nursing homes provide care for individuals who need assistance with one or more activities of daily living (ADLs), which are generally defined to include eating, walking, dressing, bathing, getting into and out of a chair/bed, using the toilet, and continence. As a result, the primary determinant of the quality of nursing care is the quality of the nursing staff who assist the residents. Certain dimensions of nursing quality are straightforward to measure, such as level of training (registered nurse, etc.). Other dimensions, such as average years of experience or turnover may be more difficult for prospective residents to assess. Still other dimensions, such as the attentiveness and responsiveness of the nursing staff, require a subjective assessment, which may be difficult to determine ex ante or—due to the idiosyncratic nature of nursing care—communicate to other prospective residents ex post.

Nursing home care is but one of a number of long-term care options available to elderly individuals who are no longer able to live independently. Perhaps the closest substitutes are care by relatives and home health care. Home health care is provided through agencies that supply nurses to the individual's residence on a regular basis. Other forms of long-term care are more distant substitutes, with assisted living facilities and retirement communities generally serving the needs of elderly who do not require the level of assistance that would warrant nursing home care or home health care.

Depending on the intensity of care required, nursing home residents are generally classified as either skilled nursing care or intermediate care residents; the former require more intensive and constant nursing care and are consequently charged more. Skilled nursing care residents represent the large majority of nursing home admissions, and these residents are consequently the focus of this study. During the period analyzed here, private funds and Medicaid represented the primary sources of payment to nursing homes. Many individuals without sufficient private funds to afford nursing home care are admitted with Medicaid funding. Of the individuals who are admitted to nursing home care with their own funds, on the order of ten percent spend down their private assets and enroll in Medicaid prior to being discharged (Spence and Wiener 1990). During the period under consideration, relatively few private payers were covered by long-term care insurance, with less than one percent of all nursing home costs covered by private long-term care insurance as of the early 1990s (Wiener, Illston, and Hanley 1994; Binstock, Cluff, and von Mering 1996). While the

government determines Medicaid reimbursement rates prospectively in Wisconsin, the nursing home can choose the price that it charges its private payers.[7] Assuming, then, that the Medicaid reimbursement rate is above the marginal cost of production and below the willingness to pay of some private payers, the profit-maximizing nursing home will prefer to admit residents with private funds and will only admit Medicaid residents after private payer demand has been satisfied. Since Medicaid residents are unlikely to be able to choose freely among all nursing homes, only demand by private payer residents is studied in this paper.

An individual who requires nursing home care may apply to any number of nursing homes for admission. As part of the application process, the prospective applicant must complete a medical examination and be under the care of a physician. The nursing home will also request and examine data on the individual's financial status to determine the individual's ability to pay. The application process culminates in the nursing home's decision to accept or reject the application. A commonly given explanation for rejection is that the applicant's required level of care exceeds that which the facility can provide. An applicant who is accepted will be placed on a waiting list for admission if a bed is not immediately available. According to Robert Huncosky (2000), Program and Planning Analyst at the Wisconsin Bureau of Quality Assurance, nursing homes in Wisconsin are granted full discretion over how they admit their residents but are required to provide comparable care to comparable residents who have already been admitted. Thus, a Wisconsin nursing home may legally discriminate against the less profitable Medicaid patients in the admissions process, but it may not legally reduce the level of care provided to a Medicaid resident below the level that is provided to a comparably healthy private payer resident.

Data

The primary source of data for this study is the *Wisconsin Nursing Home Directory and Fact Book*. This directory is an annual publication of the Wisconsin Center for Health Statistics and covers all nursing homes in the state. For each nursing home, data are provided on ownership type, private payer prices, Medicaid reimbursement rates, the number of private payers admitted (for years after 1986), the number of private payers in residence on December 31, the number of staffed beds, bed capacity, the average daily census, the

full-time equivalent number of nurses of various designations (registered nurse, licensed practical nurse, nurse aide), the fraction of stays that are less than one year, and the address of the facility. The Wisconsin Bureau of Quality Assurance provided data on federal violations by nursing homes (specifically, the number of federal violations for which each nursing home was cited, for each year). Several of these variables capture dimensions of the quality of a nursing home. In particular, in the models below I use the following variables to measure nursing home quality: the number of registered nurses per bed, the number of nurse aides per bed, and the number of federal violations. In the discussion of the data that follows, I will frequently compare for-profits with all other organizations, meaning the set of nonprofit and government firms taken together; I refer to this set of organizations as "not-for-profits."

The raw data, which consisted of 4,896 observations, were reduced to the data set analyzed here according to the following steps. First, records for which variables of interest—i.e., those variables that are used in the estimation routines—had negative or missing values were deleted. Second, all records for which the private payer price of care was less than one dollar per month were eliminated. Finally, nursing homes with hospital affiliations were deleted from the sample, since demand for these nursing homes may actually reflect demand for (or elements of demand for) the attached hospital. The resulting data set contained 3,605 observations over the twelve years from 1984 to 1995, corresponding to an average of roughly 300 nursing homes per year.

In general, the data appear to be measured accurately, with the exception of private payer prices. Many nursing homes have both single and double rooms for their residents; residents occupying a single room pay a higher price. Whenever a nursing home submits both private payer prices to the Center for Health Statistics, however, the directory reports only a single price, which is the average of the two numbers.

Descriptive statistics for the pooled sample are reported in table 1. Just over 48 percent of the sample is not-for-profit, with the distribution of not-for-profits breaking down fairly evenly across the religious nonprofit, secular nonprofit, and government ownership types. Occupancy rates average over 92 percent, suggesting that many nursing homes are at capacity. The within-county market share for a given nursing home is around nineteen percent, indicating that in a given year the typical nursing home will care for roughly

one fifth of the private payer patients receiving nursing care in the county. Note that the average private payer rate exceeds the average Medicaid reimbursement rate by $9.60 per day, or just over $3,500 per year. Also note that somewhat more than half of all nursing homes are located in a metropolitan statistical area (MSA).

Table 2 reports sample means for selected variables, by ownership type. On average, religious nonprofits admit the most private payers in a given year and have the most in residence in the end of the year, while for-profits have the fewest. Government facilities have the largest capacities and the smallest fraction of residents staying less than one year; they are also least likely to locate in an MSA. Private payer prices are comparable across all four ownership types. Of particular relevance to this study are the within-county market shares, which are smaller at for-profit nursing homes than at any of the other three ownership types.

Given the high occupancy rates and the difficulty of expanding capacity,[8] one might conjecture that market shares—as measured by the nursing homes' shares of residents—may simply reflect differential capacities. That is, if not-for-profit nursing homes in Wisconsin have a higher share of beds than do for-profits, a higher share of private payer residents at not-for-profits may simply reflect this higher bed share. Figure 1 compares not-for-profit private payer shares and bed shares over the sample period. A nursing home's private payer share in a given year is computed as the total number of private payers in the home on December 31, divided by the total number of private payers in all nursing homes on December 31 of that year. (Bed shares are computed similarly.) As the two trends reveal, private payer shares and bed shares are clearly not independent. Nonetheless, the trends are not identical, suggesting that capacity can explain but a part of the allocation of nursing home residents across facilities. I revisit the issue of differential capacity constraints and patient turnover rates in the estimations.

The trends in private payer shares, by type of not-for-profit, are shown in figure 2. In all years, private payer shares are highest at religious not-for-profits. While the private payer advantage enjoyed by religious nonprofits dips slightly over the sample period, the secular nonprofit private payer share nearly doubles, and the government private payer share is roughly the same at the end of the sample period as in the beginning.

IV. Model and empirical strategy

Since the data do not contain individual-specific information, the empirical strategy relies on an aggregation assumption to deduce information about consumer preferences from firm-level market share data. Intuitively, if each individual selects the product that she prefers most, then, in the aggregate, a relatively high market share will reflect the average consumer's preference for that product, other things equal.[9] (For comparative purposes, an alternative model that does not rely on free consumer choice is also presented in the next section.)

More specifically, private payer consumers are assumed to choose among firm outputs based on the outputs' product attributes. That is, a consumer's preference for a given output reflects that consumer's preference for the bundle of attributes that the product embodies. In the case of the nursing home industry, the consumer will likely have preferences over a home's location, price, bed availability, and a set of variables that capture the perceived quality of the nursing home. Some of these variables, including information about ownership type, are available in the data. Other relevant variables are observed by the consumer but are not included in the data. Let the indirect utility accruing to consumer *i* when purchasing output *j* in market *t* be expressed as a linearization of a Cobb-Douglas utility function:

$$u_{ijt} = \beta' X_{jt} - \alpha \frac{LOS^e \cdot p_{jt}}{W_{it}} + \xi_{jt} + \eta_{ijt},$$

where *X* is a vector of nursing home attributes, LOS^e is expected length of stay in years, *p* is the annual price of nursing care, *W* is wealth, η is an error term, and ξ is a firm-specific measure of average utility accruing to consumers as the result of nursing home characteristics that consumers can observe but are not measured in the data (henceforth referred to as unobserved quality). *X* includes indicator variables for ownership status, a set of variables measuring observable quality (nurse aides per bed lagged one year, registered nurses per bed lagged one year, number of federal violations lagged one year), and a proxy for bed availability (log of the number of staffed beds).

Following methods developed by McFadden (1978) and Cardell (1997), I adopt an error structure that permits a consumer's preferences for nursing homes in a given county to be correlated. For consumer *i* purchasing from nursing home *j* in county *g* and market *t*, the composite error term is expressed as

$$\eta_{ijt} = \zeta_{igt} + (1-\sigma)\varepsilon_{ijt},$$

where σ is a parameter to be estimated that captures the strength of any within-county correlation.[10] The latter term, ε_{ijt}, is interpreted as the consumer-specific deviation from the average consumer utility associated with unmeasured characteristics of nursing home *j* in market *t*.

A market is defined here as the state of Wisconsin in a given year. Consumers purchasing nursing home care in year *t* are assumed to have $J_t + 1$ choices. They may purchase from any of J_t nursing homes—which is equal to the number of nursing homes in the state in year *t*—or they may choose instead to purchase an outside good (designated in the model as good *0*), which is assumed here to be home health care. When all consumers buy from the nursing homes that they most prefer, then the market share of nursing home *j* in year *t* is computed by integrating over the set of all values of η_{ijt} such that $u_{ijt} > u_{ikt}$ for all *k* not equal to *j*, conditioning on nursing home characteristics, prices, and consumer wealth. Unfortunately, measures of prospective nursing home residents' wealth are not available, and attempts to simulate individual wealth were unsuccessful in that they led to very large standard errors for all coefficients. As a result, median household income in county *g* and year *t* is used as a crude proxy for the ratio of individual wealth to expected length of stay. Thus, the variable that is ultimately included in the model as a regressor (price divided by median household income) is equal to the true variable of interest (price times expected length of stay divided by individual household wealth) plus an error term, v_{ijt}. It can be shown that if η_{ijt} is distributed according to the extreme-value distribution, there exists a unique distribution for v_{ijt} such that the composite error term, $\alpha v_{ijt} + \eta_{ijt}$, also has an extreme-value distribution.[11]

If the composite error term has the extreme-value distribution, then the difference between the log of the market share of nursing home *j* in year *t* and the log of the share of home health care in the same year can be expressed as

$$\ln(s_{jt}) - \ln(s_{0t}) = \beta' X_{jt} + \alpha \frac{p_{jt}}{y_{jt}} + \sigma \ln(s_{jt|g}) + \xi_{jt},$$

where $s_{jt|g}$ is the within-county market share—i.e., the market share of nursing home *j* in market *t* computed only with respect to other nursing homes in county *g*.[12] This is the specification that I will estimate. For the purposes of estimation, nursing home market shares are computed on the basis of private payer skilled nursing care residents in the facility on December 31. In subsequent estimations, I will also use measures of market share based on the number of private payer skilled nursing care admissions.

Several points should be noted regarding the estimation of the model. The first is that certain dimensions of unobserved quality—that is, those captured by ξ_{jt}—may change little over time. To the extent that this is true, fixed effects estimation is appropriate. In this case, the error term in the regression specification represents not unobserved quality, but rather the deviation in a given year of unobserved quality from its nursing home-specific mean. The fixed effects models estimated here contain both firm and year effects.

The presence of fixed effects in the model implies that the effects of nursing home attributes that do not vary over time cannot be estimated in the same regression. For the purposes of this paper, the most important of these attributes is ownership type.[13] These effects can be recovered with a minimum distance procedure that regresses estimates of the fixed effects from the original specification on the time-invariant product attributes (Chamberlain 1982, Nevo 2001). Since all variables involved in this second regression are time invariant, the procedure relies on cross-sectional variation in ownership types to identify ownership effects.[14]

Both price and within-county market share are endogenous variables. One expects that both prices and within-county market shares will be higher when nursing homes provide abnormally high unobserved quality. Thus, price and within-county market share are each likely to be correlated with the error term and

require instruments. The Medicaid reimbursement rate is used as an instrument for price, whereas the average number of beds of other nursing homes in the county and the number of competing nursing homes in the county are instruments for within-county market share, following the suggestion of Berry (1994).

V. Results

To provide a benchmark for subsequent results, ordinary least squares results from the nested multinomial logit model are presented in the first column of table 3. The results imply that the market shares of government nursing homes are lower than those of otherwise comparable for-profit institutions. (The omitted category is for-profit firms.) The coefficient on nonprofit status is insignificantly different from zero, implying the absence of a nonprofit ownership effect. Similarly, the other estimated coefficients have the anticipated signs but are generally accompanied by large standard errors. The two exceptions are the coefficients on federal violations and within-county market share. The minimum distance R^2 is a measure of the amount of cross-sectional variation in the estimated fixed effects that is explained by ownership type. The values of this statistic are generally low across specifications, suggesting that much of the variation in the fixed effects is due to the presence of unobserved quality. The minimum distance χ^2 statistic tests the hypothesis that unobserved quality is equal to zero (Nevo 2001). This hypothesis is easily rejected in all specifications, confirming the importance of modeling unobserved quality explicitly. As with all subsequent regressions, the validity of the instruments was confirmed using an overidentification test due to Basmann (1960).

The second column reports two-stage least squares estimates of the same specification. The results suggest the existence of a positive (relative to for-profits) ownership effect for nonprofits and a negative ownership effect for government nursing homes. All of the other coefficients have the anticipated signs, with more nurses per bed and fewer federal violations translating into higher market shares. The number of staffed beds at the nursing home is also positively correlated with market share. The coefficients on income-adjusted price and within-county market share both declined relative to the OLS estimates, as anticipated. The former implies an own-price elasticity of demand of –1.25 when evaluated at the median values of within-county

market share, annualized price of care, and household income. This is comparable to the elasticities previously estimated by Nyman (1989) and Scanlon (1980).[15]

The third column of table 3 replaces the nonprofit indicator variable with two separate indicator variables for religious nonprofit and secular nonprofit status. The estimated religious nonprofit effect exceeds the secular nonprofit effect, but the results of a Wald test show that the equality of the two effects cannot be rejected at any standard level of significance. Market shares continue to be smaller at government nursing homes than at any other type, other things equal. The estimated ownership effects are quite large. Based on the model estimates, the typical religious nonprofit is predicted to have a within-county market share that is 8.1 percentage points higher than that of an otherwise comparable for-profit. The corresponding effects for secular nonprofits and government nursing homes are 5.3 and –11.2 percentage points, respectively.

While the preceding results relied on market shares that were computed based on the number of private payers residing in the home on December 31, it is also possible to construct market shares based on the number of private payer admissions. Admissions data, which were collected beginning in 1987, include what might be termed false private payers: those individuals who are technically private payers upon admission and yet quickly spend down their private assets within a few months (Nyman 1989). False private payers are less likely to respond to changes in prices and also may be less likely to be moved by a nursing home to the front of a waiting list for beds, given their limited financial resources.

The first column of table 4 replicates the third column of table 3, for comparative purposes. The second column reports results of the model when admissions-based market shares are used in the dependent variable (1988-1995). In order to facilitate comparisons across the two different definitions of market share, results of a third regression—which uses the original (stock-based) definition of market share but only utilizes data between 1988 and 1995—are presented in column three. In both of the latter specifications, ownership effects for religious and secular nonprofits are again positive, while the effect for government nursing homes remains negative. The effects are also comparable in magnitude to those estimated in the original regression, with the government effect somewhat larger in the third regression.

The role of capacity constraints

The presence of binding capacity constraints may bias the results reported above. In general, for-profit nursing homes that would otherwise be forced to ration private payer demand can be expected to eliminate excess demand by raising their private payer rates. Since it is not clear that nonprofit and government nursing homes maximize profits, however, these two ownership types may not raise private payer rates to clear excess private payer demand. To the extent that nonprofit and government nursing homes ration private payers while for-profits do not, the ownership effects estimated above understate the true consumer preference for nonprofits and overstate the consumer's dislike of government facilities. That is, the true nonprofit ownership effect is larger than the estimated effect if capacity constraints are forcing private payers away from nonprofits and toward the less preferred for-profit facilities.

The model estimated above is based on "nearly free" choice at a given point in time among all existing products. If consumers cannot choose freely, then the aggregation assumption of the model is not valid, and the model estimates cannot be interpreted as parameters of individual utility functions. When private payer waiting times are short relative to the period for which the data are collected (one year, in the case of the Wisconsin nursing home data), the model presented here—which includes a proxy for waiting times—will do a reasonably good job of accommodating them. When actual private payer waiting times are long relative to a year, however, the model is less satisfactory.

Unfortunately, it is impossible to determine from the nursing home data whether private payers generally face extended waiting times for admission, i.e., whether capacity constraints at nonprofit and government nursing homes are truly binding with respect to private payers. Prospective Medicaid residents effectively receive nursing home care at a price of zero, implying that the total demand for nursing home care is large relative to the number of licensed nursing home beds. Therefore, one expects that all nursing homes will operate at or near capacity—assuming that the Medicaid reimbursement rate exceeds the marginal cost of a facility's last available bed—since under such circumstances nursing homes will always find it profitable to fill all of their beds. This does not necessarily imply that a private payer will have to wait for an extended period for an available bed, however, since nursing homes that prefer to admit private payers can always

move them to the top of the waiting list. Moreover, since it is costless to put one's name on a waiting list, predicted waiting times that are based only on resident turnover and the length of waiting lists will consistently overstate actual waiting times.

If actual waiting times (for private payers) at nonprofit and government nursing homes are sufficiently long, then a model that considers the influence of supply constraints explicitly and does not rely on an assumption of unconstrained utility maximization will be preferable. One might expect that market shares will be a function of demand-side variables relating to quality of care and supply-side variables that influence the availability of beds, such as bed turnover (measured here by the fraction of residents with lengths of stay under one year) and bed capacity. The results of such regressions are presented in table 5. The dependent variable in the first column is the log of the number of private payers in residence at the end of the year, while the dependent variable in the second column is the log of the number of private payer admissions. The dependent variables in the third and fourth columns are the logs of the within-county market shares of end-of-year private payers and private payer admissions, respectively. The independent variables include, in addition to the regressors employed above, a dummy variable indicating whether the nursing home is located in a metropolitan statistical area and interactions between the supply-side variables and ownership indicator variables. As previously, price is assumed to be endogenous. Relative to the preceding structural model of utility maximization, this reduced form model has the advantage of incorporating supply-side variables that plausibly influence private payer market shares instead of implicitly assuming free consumer choice. This advantage is not without cost, however, as the present model is unable to incorporate consumer preferences over specific locations or measure meaningful substitution effects across nursing homes.

The results of the regressions are consistent with those of the earlier model, with ownership effects strongest at the religious nonprofits and negative at the government facilities. The models that utilize the log of within-county market share as the dependent variables are in several respects less satisfactory than the models that use the log of private payers. (Note, for example, the small magnitude and statistical insignificance of the price elasticity in columns three and four.) The latter two models do, however, allow for a more direct comparison of ownership effects with those estimated in the earlier utility maximization model.

Based on the results presented in column three, the religious nonprofit, secular nonprofit, and government ownership effects are 4.8, 3.3, and –2.6 percentage points, respectively.[16] Thus, a religious nonprofit is predicted to have a within-county market share that is 4.8 percentage points higher than a comparable for-profit after controlling explicitly for supply-side measures of bed availability. Note that the estimated ownership effects are smaller in magnitude than those estimated for the corresponding model of utility maximization. The ownership effects are all significantly different from zero. Thus, estimated ownership effects cannot be attributed exclusively to differences in bed turnover and bed capacity.

Sensitivity analyses

Variations on the specifications presented above were also estimated. Among the variations estimated were models that omitted fixed effects, models that used contemporaneous rather than lagged regressors, and models that used different measures of staffing. With one exception, the estimated ownership effects for all models estimated were similar in both magnitudes and statistical significance to those reported in the tables: Religious nonprofits had the highest ownership effects, governmental effects were negative, and all measured effects were statistically different from zero. The one model for which this pattern did not hold was an analogue of the third column of table 5, in which religious nonprofit and secular nonprofit nursing homes were aggregated into a single nonprofit category; in that model, the governmental effect was 0.0634 and insignificantly different from zero.[17]

VI. Discussion

The results are generally consistent across specifications and reveal that both types of nonprofit have larger market shares than do for-profits, while government nursing homes have the lowest market shares, ceteris paribus. These results are consistent with the interpretation that the market share differentials reflect a consumer preference for nonprofits over for-profits, and for for-profits over government homes.

The primary implication of the findings reported here is that ownership type appears to matter to consumers. The results cast doubt on the arguments that ownership type is irrelevant or unknown to

individuals making purchases in mixed markets. If consumers did not know or care about the ownership type of producers, then one would expect them to purchase randomly across different ownership types, other things equal, which is contrary to the conclusion implied by the above analysis. While it does appear that consumers value nonprofit status, however, the reasons for this preference are not entirely clear: The positive nonprofit effect in the nursing home industry may be the result either of the signal value of nonprofit status or of systematic product differentiation between nonprofits and other ownership types. Both explanations suggest that nonprofits can enhance social welfare—either through facilitating trade and lowering transactions costs (the signaling explanation) or increasing variety (the product differentiation explanation)—in ways that for-profits cannot. That is, if for-profits were credible sellers that could differentiate their products in the same ways that nonprofits do, then one would not expect to observe a distribution of market shares that consistently favors nonprofits.[18]

Traditional theories of the signal value of ownership types—which suggest that consumers prefer those organizations that are bound by a nondistribution constraint to those that are not whenever quality is nonverifiable—are inadequate to explain the result that government nursing homes have lower market shares than for-profits, other things equal. A product differentiation story may be more plausible. To the extent that nursing homes reject applications for admission when prospective residents have insufficient private funds, government nursing homes may act as a safety net for Medicaid patients, admitting all those who could not gain admission elsewhere. Such an access-oriented mission may be pursued at the expense of certain costly dimensions of output quality that the consumer observes (and values) but are not recorded in the data. Under such circumstances, private payers may elect to avoid government nursing homes in favor of other ownership types.

The evidence presented here does not support the contention that consumer preferences for religious nonprofits drive the more general nonprofit effect; this finding is consistent across specifications. One might expect, a priori, that religious nonprofits would fully account for any general nonprofit effect for two reasons. First, if prospective residents use the name of the nursing home to infer ownership type, it is generally easier to identify religious nonprofit status (e.g., St. Mary's) than secular nonprofit status (e.g.,

Whispering Pines), which may be indistinguishable by this name recognition method from for-profit status (e.g., Whispering Oaks). Second, if prospective residents are concerned about being exploited, they may place their trust in an organization that they believe shares their religious values, and not in the nondistribution constraint. Both lines of reasoning suggest positive ownership effects for religious nonprofits only. In fact, estimated effects for secular nonprofits were consistently positive and, in all but one specification, statistically equivalent to the estimated effects for religious nonprofits. Thus, to the extent that buyers use ownership type as a proxy for nonverifiable quality, buyers appear to trust (and recognize) both secular and religious nonprofits.

Conclusions

The analysis presented here shows that—after controlling for differences in bed capacity, bed turnover, price, location, and quality—market shares for nursing homes in the state of Wisconsin are highest for nonprofits and lowest for government nursing homes, with for-profits occupying an intermediate position. Ownership type does appear to matter to consumers, and theories of ownership type based on the presence of nonverifiable quality find some support in the consistently positive nonprofit effects estimated here. Whether the estimated nonprofit effect is the result of signals of nonverifiable quality or of verifiable product differentiation, the results suggest in either case a consumer preference for the type of outputs that nonprofits produce, which in turn suggests that nonprofits serve a valuable purpose by providing outputs that are not available in the for-profit sector. The case of government nursing homes is more complex. The evidence presented here suggests that private payer consumers prefer private nursing homes to government facilities, yet the latter may still play a social role as a safety net for those lacking private funds who may find it difficult to be admitted elsewhere. In other words, while the results do not find support for the argument that government nursing homes enhance welfare by providing a product that is demanded by private payers and yet not supplied by the private sector, government facilities may increase welfare in other ways not studied here. It would be of interest to learn the extent to which government nursing homes do indeed admit sicker or poorer residents that had previously been turned away at private facilities.

Of additional interest is the extent to which the nonprofit effect has changed in recent years with the formation of watchdog organizations that monitor and "grade" nursing homes. If the nonprofit effect reflects a signal of nonverifiable quality, then the collection and dissemination of information that is otherwise costly to obtain should correspond to a decline in the nonprofit effect, as individual nursing home reputations become tied more closely to the monitors' reports and less to ownership type. While the nonprofit effect in the nursing home industry would be weakened in such circumstances, it would still be possible for nonprofit status to play a socially valuable role as the guarantor of the integrity of the monitoring organizations.

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[1] A nonprofit may, in fact, realize taxable income if that income is generated by an activity that is unrelated (in the view of the IRS) to its mission.

[2] In a study of the hospital industry, Sloan (1988) finds that the weighted-average cost of capital is actually slightly lower for nonprofits than it is for for-profits. I am not aware of any comparable studies of the nursing home industry, which is the industry considered in this paper.

[3] It is not unusual for more than one ownership type to compete within the same county. Of the 824 county-years in the data set analyzed in this paper, 69.9 percent are characterized by the presence of two or more ownership types.

[4] These authors have generally applied their arguments to the case of nonprofit organizations, but since their arguments rest on the presence of a nondistribution constraint, one form of which also applies to governmental organizations, their arguments can also be extended to the latter type.

[5] Mauser (1993), studies a related question in her analysis of nonprofit and for-profit day care facilities, but she does not measure ownership effects, as defined and discussed here, explicitly. Instead, her analysis seeks to identify the characteristics of consumers who choose nonprofit day care and asks how these differ from the characteristics of consumers who choose for-profit day care.

[6] There is a substantial supply-side literature on whether outputs differ across ownership types and the extent to which the differences measured in various dimensions of output are meaningful. See Weisbrod (1998) for a nice summary of this literature.

[7] Private payer rates are regulated in several states; Wisconsin, however, is not one of them.

[8] During the time period studied here, nursing homes in Wisconsin were subject to certificate-of-need laws, according to which nursing homes were only allowed to expand if they were successful in convincing the state government that expansion was clinically necessary.

[9] While the aggregation assumption itself—which assumes a particular distribution of disturbances in the econometric model—is standard, the framework used here is susceptible to criticism on other grounds. First, it assumes that individuals can choose freely among all available outputs, which may not be true in the nursing home industry. Second, it assumes that all consumers have the same preferences over ownership types. The first objection is addressed in the next section. The second can be dealt with in the context of a discrete choice random coefficients model, for which Berry, Levinsohn, and Pakes (1995) have developed estimation methods. Ballou (2000) rejects the hypothesis of random coefficients on ownership effects.

[10] Theory restricts σ to the interval [0,1]. Values of σ approaching one indicate that unmeasured individual-specific preferences are driven almost solely by location, whereas values approaching zero imply that the within-group correlation of preferences is relatively weak.

[11] Specifically, suppose that v is distributed according to $C\left(\frac{1}{\alpha},\alpha\right)$, where the $C(\cdot)$ class of distributions is defined in Cardell (1997). (Recall that α is the coefficient on the poorly measured variable.) Then an application of theorem 2.1 from Cardell (1997) shows that $\alpha v(\alpha)+\eta(\sigma)$ is distributed according to the extreme-value distribution. Furthermore, the composite error term is, by construction, independent of the value of α. It is not, however, independent of σ. The assumptions placed on the distribution of v are restrictive; price and income effects should be interpreted cautiously.

[12] See Cardell (1997, theorem 3.1). This is the familiar nested multinomial logit model, with one level of nesting. For a more complete discussion of this class of models, see McFadden (1978).

[13] While ownership type can theoretically vary over time through facility conversions, such conversions are rare; moreover, for the purposes of computing firm effects, I treat a nursing home that changes ownership as two separate firms, one for the first owner, and one for the second.

[14] The implementation of this two-step procedure is straightforward, although the computation of the covariance matrix for the combined first-stage and second-stage estimates requires some routine calculation. Computational details are available from the author upon request.

[15] The elasticities were computed for within-county market shares rather than for overall market shares to facilitate comparisons with earlier results, which assume that the county is the relevant market and do not consider the influence of an outside good. Marginal effects are derived from the formula for within-county market share under the assumptions on the error structure discussed previously:

$$s_{jt|g}=\frac{\exp\left(\left(\beta' X_{jt}-\alpha\frac{p_{jt}}{y_{jt}}+\xi_{jt}\right)\Big/(1-\sigma)\right)}{\sum_{k}\exp\left(\left(\beta' X_{kt}-\alpha\frac{p_{kt}}{y_{kt}}+\xi_{kt}\right)\Big/(1-\sigma)\right)},$$

where the sum is taken over all nursing homes *k* in the same county as nursing home *j*. This implies an own-price elasticity of demand of $\frac{-\alpha}{1-\sigma}\frac{p_{jt}}{y_{jt}}(1-s_{jt|g})$.

[16] These effects were evaluated at the mean values of capacity and fraction of patients residing less than one year.

[17] More complete results, which are not reported in the tables, are available upon request.

[18] One possible counter to this line of argument is that, for historical reasons, nonprofits may have been the first movers, which could lead to systematic product differentiation that is correlated with nonprofit status nominally but bears little actual relation to the nonprofit organizational structure. (That is, one might argue that for-profits could have produced the same outputs that the nonprofits do if the for-profits had entered the market first.) The data employed in this paper do not permit an analysis of this possibility, but greater evidence on this point would be of interest. I am skeptical of the merit of the first-mover argument here, given the for-profits' traditional dominance in the nursing home industry.

Table 1. Descriptive statistics for the pooled sample (1984-1995)

	Mean	Std. Dev.	Minimum	Maximum
Religious nonprofit ownership	0.1775	0.3822	0	1
Secular nonprofit ownership	0.1340	0.3407	0	1
Government ownership	0.1728	0.3781	0	1
Private payers (admissions)	21.0701	20.3068	0	226
Private payers (Dec. 31)	23.6508	21.3206	1	366
Total admissions	79.3437	64.7655	0	645
Total residents (Dec. 31)	119.1606	81.0532	16	744
Average daily census	119.5886	81.3215	16	743
Staffed beds	127.8239	86.0325	16	749
Licensed beds (capacity)	129.6455	86.7945	16	721
Occupancy rate*	0.9261	0.0825	0.3333	1
Within-county market share**	0.1887	0.2041	0.0006	1
Private payer price ($/day)	47.4826	12.7370	24.8877	528.4431
Medicaid reimbursement rate ($/day)	37.8834	4.8409	22.7322	70.5892
Registered nurses	9.5310	7.0078	1.3700	67.5100
Nurse aides	45.3812	31.9911	0	423.5700
Registered nurses per bed	0.0767	0.0309	0.0170	0.2915
Nurse aides per bed	0.3559	0.0868	0	0.8010
Located in MSA	0.5481	0.4977	0	1
Federal violations	8.1498	10.2760	0	133
Fraction of stays less than one year	0.2926	0.0983	0	1
Sample size	3605			

Annual data, pooled over the sample period. Annual data were available on December 31. Admissions data were collected from 1987-1995.
* The occupancy rate is defined here as residents (December 31) divided by licensed beds.
** Within-county market shares are with respect to private payer residents receiving skilled nursing care in the county on December 31.

Table 2. Selected descriptive statistics, by ownership type

	For-profit	Religious Nonprofit	Secular Nonprofit	Government
Private payers (admissions)	19.5702	36.0531	24.9317	22.0931
	15.0369	24.2448	20.4846	28.5948
Private payers (Dec. 31)	17.5875	28.9198	24.0430	21.2009
	17.1606	21.9948	24.8322	20.5527
Licensed beds (capacity)	119.5702	136.4172	104.1180	172.5441
	81.1893	78.4330	62.1028	109.3195
Occupancy rate*	0.9165	0.9597	0.9330	0.9147
	0.0832	0.0545	0.0820	0.0945
Within-county market share**	0.1763	0.1973	0.1806	0.2234
	0.2103	0.1811	0.1926	0.2118
Private payer price ($/day)	47.9748	47.7547	46.3828	46.5868
	14.9515	10.2298	9.6724	9.4700
Medicaid reimbursement rate ($/day)	36.5898	38.5869	38.5733	40.4859
	3.9650	4.9360	4.7074	5.8271
Registered nurses per bed	0.0738	0.0817	0.0819	0.0762
	0.0302	0.0304	0.0343	0.0297
Nurse aides per bed	0.3372	0.3860	0.3647	0.3742
	0.0790	0.0907	0.0891	0.0896
Located in MSA	0.5675	0.5844	0.5963	0.4157
	0.4956	0.4932	0.4912	0.4932
Federal violations	8.8483	7.4578	7.4472	7.3210
	11.2831	9.2499	9.5738	8.3435
Fraction of stays less than one year	0.3141	0.2705	0.2934	0.2505
	0.0986	0.0849	0.0961	0.0932
Sample size	1859	640	483	623

Annual data, pooled over the sample period. Annual data were available on December 31. Admissions data were collected from 1987-1995. Standard deviations are in small print.

* The occupancy rate is defined here as residents (December 31) divided by licensed beds.

** Within-county market shares are with respect to private payer residents receiving skilled nursing care in the county on December 31.

Table 3. Coefficient estimates from the nested logit model

	OLS	2SLS	2SLS
Nonprofit	0.1078	0.2021 *	-
	0.1295	0.0467	
Religious nonprofit	-	-	0.2544 *
			0.0672
Secular nonprofit	-	-	0.1653 *
			0.0577
Government	-0.4052 *	-0.3515 *	-0.3503 *
	0.1951	0.0704	0.0704
Aides per bed (lag)	0.0501	0.1004	0.1004
	0.0644	0.1115	0.1115
RNs per bed (lag)	0.2341	0.3862	0.3862
	0.1874	0.2696	0.2696
Federal violations (lag)	-0.0010 *	-0.0009 *	-0.0009 *
	0.0004	0.0004	0.0004
Staffed beds (log)	0.0522	0.1342 *	0.1342 *
	0.0430	0.0731	0.0731
Annual price / average income	-0.0356	-0.8644 *	-0.8644 *
	0.0283	0.2761	0.2761
Within-county market share (log)	0.8631 *	0.7006 *	0.7006 *
	0.0145	0.2127	0.2127
Constant	-9.1156 *	-9.4141 *	-9.3953 *
	0.3920	0.1635	0.1644
R^2	0.7731	0.7132	0.7132
Minimum distance R^2 (weighted)	0.1709	0.2070	0.2077
Minimum distance X^2	2731.9396	1263.1771	1262.0074
Sample size	3605	3605	3605

Robust standard errors are in small print. All specifications are estimated with firm and year fixed effects. The dependent variable is the log of the ratio of firm market share to outside good market share. The non-ownership coefficients and standard errors in columns two and three are identical since they are based on the same initial regression, which contains only fixed effects and not ownership effects.

* Significant at the 10 percent level or better.

Table 4. Comparisons of 2SLS logit estimates: End of year versus admissions data

	End of Year (1984-1995)	Admissions (1988-1995)	End of Year (1988-1995)
Religious nonprofit	0.2544 *	0.1989 *	0.1923 *
	0.0672	0.0722	0.0593
Secular nonprofit	0.1653 *	0.2273 *	0.1994 *
	0.0577	0.0757	0.0547
Government	-0.3503 *	-0.3394 *	-0.4647 *
	0.0704	0.0731	0.0671
Aides per bed (lag)	0.1004	0.1279	-0.0116
	0.1115	0.3304	0.0917
RNs per bed (lag)	0.3862	1.0564	0.1310
	0.2696	0.9610	0.2796
Federal violations (lag)	-0.0009 *	0.0014	-0.0010 *
	0.0004	0.0012	0.0005
Staffed beds (log)	0.1342 *	0.5040	0.0548
	0.0731	0.3745	0.0725
Annual price / average income	-0.8644 *	-1.8638 *	-0.5775 *
	0.2761	0.4490	0.3087
Within-county market share (log)	0.7006 *	0.4749	1.0159 *
	0.2127	0.5635	0.1288
Constant	-9.3953 *	-11.4145 *	-10.2566 *
	0.1644	0.2753	0.1921
R^2	0.7132	0.6117	0.7566
Minimum distance R^2 (weighted)	0.2077	0.2698	0.3794
Minimum distance X^2	1262.0074	3751.4963	1128.1739
Sample size	3605	2433	2473

Robust standard errors are in small print. The dependent variable is the log of the ratio of firm market share to outside good market share. All specifications are estimated with firm and year fixed effects. In the first and third specifications, market shares are constructed based on the number of SNF private payer residents on December 31. In the second specification, market shares are constructed based on the number of SNF private payer admissions.
* Significant at the 10 percent level or better.

Table 5. Coefficient estimates from the 2SLS model with supply- and demand-side variables

Dependent variable:	Log (Private Payers)		Log(Within-County Market Share)	
	End of Year (1984-1995)	Admissions (1988-1995)	End of Year (1984-1995)	Admissions (1988-1995)
Religious nonprofit	0.3840 *	0.2703	0.4525 *	0.4409 *
	0.1780	0.2828	0.1780	0.2634
Secular nonprofit	0.3391 *	0.3309	0.3067 *	0.5094 *
	0.1627	0.2892	0.1628	0.2693
Government	0.0628	-0.7699 *	-0.2394	-0.6327
	0.2431	0.4224	0.2431	0.3934
Aides per bed	0.8983 *	0.5204 *	0.8370 *	0.4335 *
	0.1425	0.2577	0.1425	0.2400
RNs per bed	0.6659 *	0.4700	0.0972	0.1435
	0.4013	0.7202	0.4014	0.6707
Federal violations	-0.0025 *	-0.0014	-0.0015 *	-0.0012
	0.0008	0.0015	0.0008	0.0014
Staffed beds (log)	0.5095 *	0.8384 *	0.3279 *	0.6527 *
	0.1096	0.2098	0.1096	0.1954
Nonprofit * Log(Beds)	-0.0181	-0.0367	-0.0308	-0.0334
	0.0345	0.0665	0.0345	0.0619
Government * Log(Beds)	-0.1373 *	0.0569	-0.0787	0.0637
	0.0507	0.0974	0.0507	0.0907
Fraction residing less than 1 yr.	0.3607 *	1.3992 *	0.2893 *	1.1958 *
	0.1091	0.2066	0.1091	0.1924
Nonprofit * Fraction residing<1 yr.	0.0732	0.6959 *	0.1995	0.6031 *
	0.1882	0.3470	0.1882	0.3232
Government * Frac. residing<1yr.	0.7420 *	-0.1419	0.3643 *	-0.2070
	0.2159	0.3931	0.2159	0.3661
Located in an MSA	0.1185	-0.1586	-1.0110 *	-1.0058 *
	0.0891	0.1371	0.0891	0.1277
Annual price (log)	-0.8059 *	-1.2099 *	-0.0930	-0.5202
	0.3399	0.5517	0.3399	0.5138
Average income (log)	0.1220	0.7276	0.2461	-0.1836
	0.3054	0.5665	0.3054	0.5276
Constant	-6.7060 *	-7.9062 *	14.8353 *	18.2258 *
	2.1985	3.6650	2.1986	3.4132
R^2	0.0524	0.0961	0.0335	0.0464
Minimum distance R^2 (weighted)	0.0760	0.0589	0.3064	0.3798
Minimum distance X^2	530.1269	162.5288	1306.4665	407.2822
Sample size	3605	2433	3605	

Robust standard errors are in small print. * Significant at the 10 percent level or better.

Figure 1. Not-for-profit Shares of Private Payers and Licensed Beds

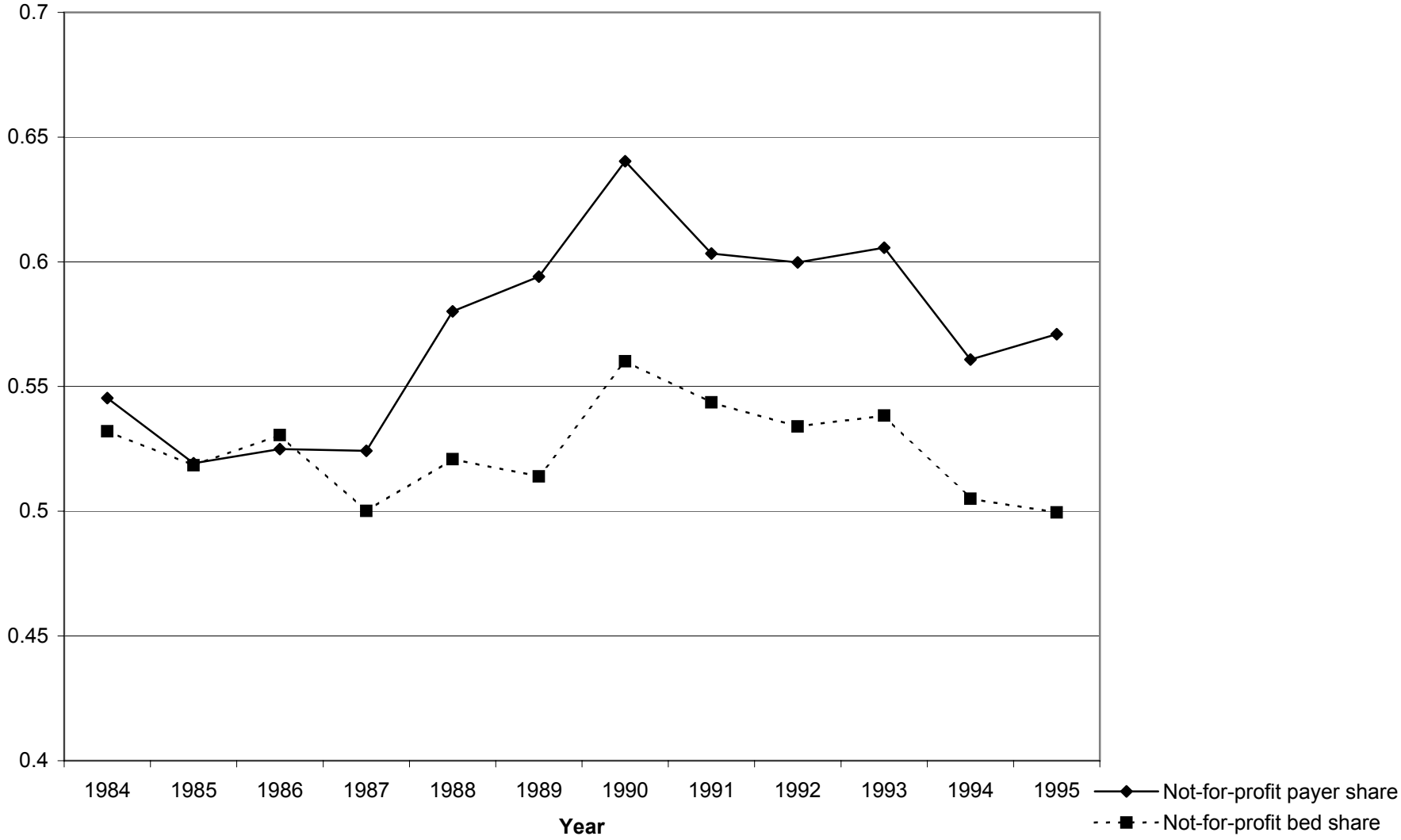

Figure 2. Religious Nonprofit, Secular Nonprofit, and Government Private Payer Shares