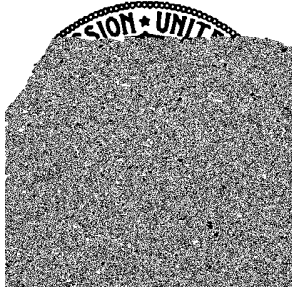


WORKING PAPERS



Hospital Competition and Charity Care

Christopher Garmon

WORKING PAPER NO. 285

October 2006

FTC Bureau of Economics working papers are preliminary materials circulated to stimulate discussion and critical comment. The analyses and conclusions set forth are those of the authors and do not necessarily reflect the views of other members of the Bureau of Economics, other Commission staff, or the Commission itself. Upon request, single copies of the paper will be provided. References in publications to FTC Bureau of Economics working papers by FTC economists (other than acknowledgment by a writer that he has access to such unpublished materials) should be cleared with the author to protect the tentative character of these papers.

**BUREAU OF ECONOMICS
FEDERAL TRADE COMMISSION
WASHINGTON, DC 20580**

Hospital Competition and Charity Care

Christopher Garmon
Bureau of Economics
Federal Trade Commission
Washington, DC

Draft: October 2006

Abstract: This paper explores the relationship between competition and hospital charity care by analyzing changes in charity care associated with changes in a hospital's competitive environment (due to mergers and divestitures), using hospital financial and discharge data from Florida and Texas. Despite the pervasive belief that competition impedes a hospital's ability to offer services to the uninsured and under-insured, I find no statistically significant evidence that increased competition leads to reductions in charity care. In fact, I find some evidence that reduced competition leads to higher prices for uninsured patients.

¹ The views expressed in this paper are the author's, not necessarily those of the Federal Trade Commission or any individual Commissioner. I would like to thank Marissa Crawford and Michelle Kambara for their valuable research assistance on this project. I would also like to thank Gloria Bazzoli, Denis Breen, Cory Capps, Martin Gaynor, Daniel Hosken, participants at the American Society of Health Economists Conference, and anonymous referees for their helpful comments and suggestions. Any remaining errors are my responsibility.

1. Introduction

In 2003, over 25 percent of the U.S. population under age 65 lacked health insurance at some point during the year. Almost 14 percent of the U.S. population under age 65 was uninsured for the entire year.² For many of the uninsured, but particularly those with low incomes and high annual health care usage, charity care by health care providers represents a large fraction of the healthcare they receive. For the uninsured overall between 1996 and 2000, 64 percent of their healthcare was charity care. For uninsured families of four with incomes less than \$51,000³ and average annual healthcare usage greater than \$10,000, 87 percent of their health care was charity care.⁴

Given the relatively large number of Americans who lack health insurance and their dependence on charity care, it is surprising how little research exists about the effect of competition on the provision of charity care. This may be due to the widespread belief that increased competition inhibits a provider's ability to offer charity care because managed care payers pay less with more provider competition. In other words, many believe that insured patients, particularly managed care and privately insured patients, cross-subsidize a hospital's charity care. If a hospital must charge less to private payers due to increased competition, it will have fewer resources to treat the uninsured. As one author recently stated: "The more the financing of hospital care moves in the direction of a 'perfect' market, the less and less funding for community service there will be."⁵

² Rhoades (2005)

³ This is 300% of the poverty threshold in 2000.

⁴ Herring (2005)

⁵ Vladeck (2006), page 42

objective, so they will provide free or below cost services to those in need. (In fact, previous theoretical models of charity care model it as a direct argument of the hospital's utility function.) Recently, the behavior of non-profit hospitals in providing charity care has been called into question. Several high-profile lawsuits have been filed against non-profit hospital systems accusing them of providing too little charity care and over-charging the uninsured.

⁶ See Weissman (2005); By law, hospitals with emergency rooms must at least stabilize patients before transfer regardless of ability to pay and some states and local jurisdictions have additional access regulations, so some charity care is mandated by law. However, for private hospitals, much charity care is at the hospital's discretion. First and foremost, uninsured patients are, at least initially, faced with the hospital's "billed charges" (i.e., list price) for their services, not the discounted prices most insured payers face. Except in Maryland, these charges are set by each hospital or system. In addition, hospitals set their charity care policy (e.g., based on patient income) and its accessibility, if they have an explicit charity care policy. Hospitals also exercise discretion in how aggressively they attempt to collect bad debt and/or how readily they convert it to "charity care" retroactively.

⁷ GAO (2005)

estimated using data from Maryland, where hospital prices are regulated. Using California data, Gruber (1994) and Mann et al. (1995) both find that charity care decreases faster in relatively competitive markets than in relatively uncompetitive markets in response to an exogenous reimbursement change affecting all hospitals (e.g., switch from a charge based system to a prospective payment system for Medicare). Although closely related, these latter two findings don't directly address the relationship between competition and charity care. Gruber, in particular, investigated the effect of the regime shift in California in 1983 that allowed selective contracting by health insurers on the provision of charity care and how this varied across competitive conditions. He found that charity care fell more in relatively competitive markets in response to this regime change, but did not report whether it remained higher than or fell below the charity care provided in less competitive markets. Likewise, Mann et al. (1995) investigated the effect of Medicare and Medi-Cal reimbursement changes on charity care and its relationship to competition. They also found that charity care fell more in competitive markets, but one table suggests that it remained higher than in less competitive markets. Mann et al. (1997) again report that hospitals provide more uncompensated care in competitive markets, but also find that "the greater the degree of HMO penetration, the lower the provision of uncompensated care relative to the hospital's size, with the effect being stronger in the most competitive markets".⁸ None of these papers investigate the effect of competition changes (i.e., mergers and divestitures) on charity care. Apart from Mann et al. (1997), the previous studies used data exclusively from the early and mid 80's, before the rise of managed care and subsequent backlash of recent years.

In this paper, I investigate the relationship between changes in competition and changes in charity care using hospital financial and discharge data from Florida and Texas from 1999 and 2002. Florida and Texas are two of the few states that report detailed hospital financial information including charity care, bad debt and the net revenue received from uninsured patients. The hospital markets in Florida and Texas are not price-regulated, allowing the possibility that a hospital could use additional market power rents from managed care customers

⁸ Exhibit 2 on page 267 of Mann et al. (1995).

⁹ Mann et al. (1997), page 230.

to increase charity care. In addition, both Florida and Texas have many for-profit and non-profit hospitals, providing a means to test whether mergers and divestitures have different effects on charity care depending on the type of ownership. However, hospitals in the two states face different regulatory environments. Florida is a “certificate of need” state, in which hospital entry and expansion are regulated, while Texas is not. Using the data from both states may provide some insight on a hospital’s response to changing competitive conditions under different regulatory systems.

Apart from data availability, the time period 1999-2002 is chosen for two reasons. First, in both states, many mergers and divestitures occurred in 2000 and 2001 between hospitals near one another, producing the variation in concentration necessary to study the effects of competition on charity care. Second, this time period is distinguished by its relative lack of hospital antitrust activity. Between 1995 and 1999, the Federal Trade Commission, the Department of Justice, and the California Attorney General’s Office were unsuccessful in six Texas is

¹⁰ Bazzoli et al. (2005)

Capps and Dranove (2004)) to study hospital competition.

Overall, I find some evidence that competition and charity care, if anything, are positively related. With the exception of Texas for-profit hospitals, I find little evidence that increasing concentration either increases or reduces charity care as measured by uncompensated inpatient care costs. For Texas for-profit hospitals, I find evidence that increasing concentration is associated with reduced charity care. I find some evidence, particularly strong in Texas, that hospitals facing reduced competition increase their prices to uninsured patients. Although further work is needed to investigate the determinants of hospital charity care, these results provide no support to the claim made by some that hospital mergers lead to benefits for uninsured patients through cross-subsidization from insured patients.

The paper is organized as follows. Section 2 describes the econometric model and its theoretical basis. Section 3 describes the data and construction of the variables. Section 4 describes and discusses the results. Section 5 concludes and discusses areas for further work.

2. Model

Frank and Salkever (1991) and Gruber (1994) both model charity care as a direct argument of a hospital's utility function. This seems unnecessarily ad hoc in motivating an analysis of charity care and counterintuitive as well. It would seem to suggest, for instance, that a hospital would benefit if more of its patients were poor and uninsured, needing charity care. Instead, I follow Gaynor and Vogt (2003) and model hospital utility as a function of profit and, separately, quantity. The latter argument reflects the possibility that a hospital's objective may not coincide perfectly with profit-maximization, but may also reflect a desire to serve the community by providing more hospital services than would maximize profit. In this context, charity care can be seen as a means to practice price discrimination: the discount given to uninsured patients (possibly contingent on some imperfect observation of the patient's¹¹ wealth). However, unlike price discrimination in other industries, charity care (as well as the discounts given to insured patients) may be used to satisfy objectives other than pure profit-maximization.

¹¹ Charity care is also sometimes provided to insured patients with high co-pays and deductibles, but most charity care is provided to uninsured patients.

Consider a market with N hospitals, each providing hospital services (which can be represented with a quantity metric Q) to two types of customers: insured patients (super-scripted with an i) and uninsured patients (super-scripted with a u). Each hospital h chooses the price to charge its insured patients, p

¹² Hospitals have no say in the price they must charge to their Medicare and Medicaid patients. Without loss of generality, it is assumed that the hospital's profit from serving Medicare and Medicaid patients is zero.

(6)

$$\frac{\partial \pi}{\partial P^u} = D^u + P^u \frac{\partial D^u}{\partial P^u} - C^u - P^u \frac{\partial C^u}{\partial P^u}$$

for $X = A, Q$. Rearranging this to solve for the uninsured price/cost margin:

(7)

$$\frac{P^u - C^u}{P^u} = \frac{1}{\epsilon^u}$$

where ϵ^u is the price elasticity of hospital h 's residual demand from uninsured patients. Equation (7) is, of course, just a modified version of the Lerner Index of market power. In particular, it implies that as competition increases, which increases (in absolute value) the hospital's elasticity of residual demand from uninsured patients, the price charged to uninsured patients will fall. As (7) illustrates, this effect will be smaller for hospitals with objectives apart from profit-maximization. Of course, there is also a condition analogous to (7) for insured patients.

However, the derivation of (7) assumes that the hospital's profit constraint does not bind. If the profit constraint binds, it is possible that the average price charged to patients is higher than the hospital would set without the constraint (i.e., the hospital would like to lower its price to both types of patients to provide more services to the community (i.e., more Q), but cannot

¹³ This, of course, requires that $\epsilon^i < \epsilon^u$ (i.e., ϵ^i > in absolute value) which is likely since insured patients only see a small portion of any hospital price increase in their co-insurance, if they see any of it at all.

competition should be more often observed from for-profit hospitals in less competitive markets

groups, which are partially determined by price, there is the potential for bias from the use of an endogenous variable. To avoid this bias, I use the predicted change in the SSHHI based on the base period market shares. (In other words, the 2002 shares are calculated using the 1999 data with the 2002 system configurations.) Since some bias may remain because of the endogeneity of price and market shares in the base period, I also calculate the SSHHI using flows for insured patients, not uninsured patients. This has the added benefit of more directly testing the central hypothesis that increases in market power over insured patients will lead to more charity care through cross-subsidization.

Since theory suggests that the effect of competition on charity care and the price charged to uninsured patients will vary with the objectives of the hospital, equation (9) is estimated separately for for-profit and non-profit hospitals. In addition, since theory suggests that the effect of changes in competition on changes in charity care could vary with the initial competitive conditions, I include the base period (1999) SSHHI as an independent variable. While equation (9) eliminates any hospital characteristic that is constant over time, it is possible that charity care may change at a different rate at teaching hospitals and private hospitals with many public hospitals nearby since teaching hospitals and public hospitals are the primary “safety-net” hospitals in many communities. The number of public hospitals in the hospital’s county and a dummy variable for teaching status are included as independent variables to account for this possibility. Thus, the model actually estimated is:

$$(10) \Delta \ln^u = B \text{COMP} + B \text{PUB} + B \text{TEACH} + B \text{SSHHI} + \epsilon$$

3. Data and Variable Construction¹⁴

The primary source of data for this project is hospital financial and inpatient discharge data from the Florida Agency for Health Care Administration, the Texas Department of Health

¹⁴ A detailed description of the data and variables is included in Appendix A.

and the Texas Health Care Information Council. Data from 1999 and 2002 was used to capture variation in competitive conditions during a time of relative hospital antitrust inactivity. In 2000 and 2001, 19 hospitals in Texas and 18 hospitals in Florida were acquired by or divested from hospital systems, changing the competitive conditions in many markets in both states.¹⁵ private short-term general acute-care hospitals that served at least 100 uninsured inpatients in each year and reported inpatient charity care and uninsured revenue amounts for both years are included in the inpatient analysis.¹⁶ There are 120 such hospitals in Florida and 114 such hospitals in Texas.¹⁷

Three dependent variables are used in this analysis. As a direct measure of the price paid by uninsured patients (and an indirect measure of the charity care provided by a hospital), I use

¹⁵ Appendix B lists the hospital acquisitions and divestitures in both states.

¹⁶ All short-term general acute-care hospitals (including cardiac, pediatric, orthopedic, oncology, and surgery specialty hospitals) are included in the calculation of the SSHHI, even if they did not meet the criteria above regarding uninsured patients and charity care.

¹⁷ For the outpatient analysis, private short-term general acute-care hospitals that reported positive outpatient charity care amounts for both years were included even if the number of inpatient cases was less than 100. There are 128 such hospitals in Florida and 128 such hospitals in Texas.

¹⁸ The cost-to-charge ratio is applied to avoid measuring “increases” in charity care that are only driven by increases in the hospital’s list prices.

hospital system. This measure correctly reflects the fact that hospital systems face different levels of competition depending on the competition they face for each of the groups of patients they serve.²⁰ Capps and Dranove (2004) employ the SSHHI to show that mergers of competing hospitals often lead to higher managed care prices.

For this project, I used patient groups based on zip codes and the classifications of Diagnosis Related Groups (DRGs) used in Town and Vistnes (2001) which reflect general categories of resource use.²¹ Zip code and diagnosis-based patient groups are used to reflect the importance of distance in a patient's choice of hospital and the fact that patients are generally willing to travel farther for more complex diagnoses. The four Town and Vistnes (2001) DRG groups are used instead of the roughly 500 DRGs to insure a sufficient sample size in each patient group.

²⁰ Despite this, the SSHHI is still based on the HHI measure of competition, which some have argued does not accurately reflect competition in differentiated markets like that for hospital services. Currently, some alternate measures of hospital competition are being developed (e.g., Antwi, Gaynor, and Vogt (2006)) that are based on structural models of hospital competition. A natural extension of the current analysis would be to use these new measures, once developed, as a substitute for the SSHHI.

²¹ Group 1: DRGs with a weight ≥ 2 ; Group 2: DRGs with a weight ≥ 27 and < 2 ; Group 3: DRGs with a weight ≥ 0.91 and < 1.27 ; Group 4: DRGs with a weight < 0.91 . DRG weights are defined using the contemporaneous fiscal year definitions found in the Federal Register.

county as a proxy for changes in the demand for charity care. Since those below the poverty level usually qualify for Medicaid, this change may not closely track the change in the demand for charity care. Therefore, I also use the change in the median household income of the hospital's county and the change in the county's population as proxies for the change in the demand for charity care. In addition, a dummy variable for teaching hospitals is included to account for the possibility that changes in charity care may be different at these hospitals than at non-teaching hospitals. Since public hospitals are often the primary safety net hospitals for the poor and

²⁴ Frank and Salkever (1991)

uninsured price. The analogous price increase for a non-profit system is 37-44%. When inpatient uncompensated care is used as a measure (Table 7), there is no evidence of a relationship between competition and charity care for non-profit hospitals. Among for-profit hospitals, reduced competition leads to reduced charity care. As in Florida, there does not seem to be a relationship between competition and outpatient uncompensated care (Table 8).

Tables 9 and 10 focus on the hospitals that experienced significant changes in their competitive environments between 1999 and 2002. While there were many mergers and divestitures in both states in 2000 and 2001—creating the change in concentration needed for estimation—there were many hospitals that experienced little change in competition.²⁵ One could argue that including these hospitals in the analysis could mask the effect of competition changes on charity care, which may only be present when competition changes significantly. To investigate this, I replicated the analysis excluding all hospitals that experienced an SSHHI change less than 0.0025 in absolute value.²⁶ The results for Florida are given in Table 9 and those for Texas are given in Table 10. These results are consistent with the previous results for all hospitals: reductions in competition lead to higher prices for the uninsured in Texas, but otherwise, there is little relationship between competition and charity care.

Of particular note in all of these results is the complete lack of support for the “cross-subsidization hypothesis:” that hospitals use increased market power to fund more charity care or, stated in the negative, that increased competition will harm patients who rely on charity care. Of the 32 sets of estimates presented in Tables 3 through 10, none provide support for this hypothesis.

The result that reduced competition leads to higher prices for uninsured patients (which is strongest in Texas) juxtaposed against the general lack of a relationship between competition and uncompensated care costs may reflect the slightly different patient populations covered by these two measures. Since the self-pay price captures the uninsured who pay their entire bill, while

²⁵ Appendix C contains information about the distribution of the change in the SSHHI.

²⁶ For-profit and non-profit hospitals were pooled for this analysis to insure sufficient degrees of freedom.

²⁷ For instance, Guterman (2006)

²⁸ See MEDPAC (2005), Figure 1

patients. Most noticeable in all of the results is the lack of any statistically significant evidence for the cross-subsidization hypothesis. The data provides no statistically significant evidence that increased competition leads to reductions in charity care. The claim that hospitals will use market

Table 1: Florida Data

Variable	Mean	Std. Dev.	Min	Max
self_pay_price99	\$12,834	\$5,865	\$1,664	\$43,731
self_pay_price	\$43,731			

Table 3
 State: Florida
 Dependent Variable: Self-Pay Price Change

Variable	FOR-PROFIT		NON-PROFIT	
1999 SSHHI	-0.511*** (0.093)	-0.421*** (0.075)	-0.153 (0.170)	-0.158 (0.142)
SSHHI Change	0.062 (0.591)	-0.030 (0.740)	1.826** (0.777)	1.370* (0.805)
Self-Pay CMI Change	0.327 (0.298)	0.219 (0.294)	-0.366 (0.498)	-0.336 (0.510)
CS Residual	-0.594*** (0.138)	-0.592*** (0.138)	-0.559*** (0.142)	-0.578*** (0.155)
Wage Change	-0.030 (0.302)	0.085 (0.300)	1.143* (0.660)	1.356* (0.776)
Poverty Change	-0.584 (0.452)		-0.283 (0.939)	
Population Change		0.108 (0.902)		0.375 (1.672)
Median Income Change		0.109 (1.169)		-2.457 (2.566)
Teach		-0.156 (0.399)	-0.152 (0.398)	
# of Pub. Hosp.	-0.007 (0.019)	-0.015 (0.019)	0.161*** (0.036)	0.147*** (0.031)
Type Change			0.525** (0.223)	0.411* (0.221)
N	65	65	55	55
F	36.792	30.599	19.034	20.795
R ²		0.785	0.778	0.618
Adj-R ²		0.759	0.747	0.543

Huber-White robust standard errors in parentheses

* p<.1; ** p<.05; *** p<.01

Table 4
 State: Florida
 Dependent Variable: Inpatient Uncompensated Care Cost Change

Variable	FOR-PROFIT		NON-PROFIT		
1999 SSHHI	-0.215 (0.130)	-0.193 (0.164)	-0.263 (0.165)	-0.131 (0.126)	
SSHHI Change	-0.299 (1.281)	0.092 (1.193)	0.581 (0.928)	0.259 (1.117)	
Self-Pay CMI Change	-0.509 (0.627)	-0.581 (0.623)	-0.396 (0.441)	-0.311 (0.560)	
CS Residual	-0.215*** (0.077)	-0.198*** (0.072)	-0.094 (0.082)	-0.099 (0.088)	
Wage Change	0.825 (0.499)	0.772 (0.536)	0.860 (0.525)	1.450** (0.568)	
Poverty Change	-0.088 (0.689)		-1.627* (0.841)		
Population Change		-0.662 (2.550)		0.004 (1.602)	
Median Income Change		1.585 (2.515)		-3.423 (2.349)	
Teach		-0.143 (0.119)	-0.112 (0.159)		
# of Pub. Hosp.	0.014 (0.019)	0.010 (0.021)	0.054 (0.054)	0.019 (0.047)	
Type Change			-0.253* (0.144)	-0.478*** (0.175)	
N	65	65	55	55	
F	14.493	12.448	5.641	4.141	
R		² 0.519	0.518	0.424	0.436
Adj-R		² 0.461	0.450	0.311	0.311

Huber-White robust standard errors in parentheses

* p<.1; ** p<.05; *** p<.01

Table 5
 State: Florida
 Dependent Variable: Outpatient Uncompensated Care Cost Change

Variable	FOR-PROFIT		NON-PROFIT			
1999 SSHHI	0.080 (0.137)	0.100 (0.158)	-0.599*** (0.218)	-0.578*** (0.214)		
SSHHI Change	-2.036* (1.107)	-1.936 (1.200)	0.203 (0.993)	1.223 (1.181)		
CS Residual	-0.153 (0.100)	-0.192* (0.106)	-0.211 (0.131)	-0.249* (0.134)		
Wage Change	1.429** (0.639)	1.330** (0.632)	-1.821* (1.015)	-2.215*** (0.812)		
Poverty Change	0.989 (0.732)		-0.553 (0.886)			
Population Change		2.566 (2.296)		-2.206 (2.754)		
Median Income Change		-0.007 (1.838)		4.749** (2.291)		
Teach		-0.188 (0.151)		-0.192* (0.109)		
# of Pub. Hosp.	-0.068** (0.027)	-0.063** (0.027)	0.085* (0.050)	0.104** (0.046)		
Type Change			-0.962*** (0.202)	-0.797*** (0.234)		
N	67	67	61	61		
F	4.691	4.066	94.325	62.639		
R		² 0.312	0.317	0.356		0.390
Adj-R		² 0.245	0.237	0.259		0.285

Huber-White robust standard errors in parentheses

* p<.1; ** p<.05; *** p<.01

Table 6
 State: Texas
 Dependent Variable: Self-Pay Price Change

Variable	FOR-PROFIT		NON-PROFIT		
1999 SSHHI	-0.481*	-0.200	-0.153	-0.248	
	(0.246)	(0.271)	(0.406)	(0.292)	
SSHHI Change	4.520***	3.978***	3.327**	3.811***	
	(0.636)	(0.728)	(1.293)	(1.313)	
Self-Pay CMI Change	1.957**	1.858*	1.047***	1.022***	
	(0.960)	(0.925)	(0.345)	(0.326)	
CS Residual	-0.664***	-0.686***	-0.480***	-0.484***	
	(0.179)	(0.180)	(0.140)	(0.144)	
Wage Change	0.056	-0.119	-0.174	-0.378	
	(1.161)	(1.283)	(1.436)	(1.334)	
Poverty Change	-0.461		-0.838		
	(0.490)		(1.572)		
Population Change		-0.557		-3.469	
		(0.849)		(3.844)	
Median Income Change		6.688*		0.692	
		(3.896)		(4.508)	
Teach	-0.332	-0.315	-0.127	-0.154	
	(0.672)	(0.664)	(0.211)	(0.230)	
# of Pub. Hosp.	-0.062	-0.004	-0.024	-0.032	
	(0.149)	(0.155)	(0.131)	(0.145)	
Type Change	-0.118	-0.028			
	(0.309)	(0.310)			
N	45	45	69	69	
F	82.050	65.290	5.810	5.844	
R		² 0.558	0.585	0.318	0.326
Adj-R		² 0.447	0.466	0.228	0.224

Huber-White robust standard errors in parentheses

* p<.1; ** p<.05; *** p<.01

Table 7
 State: Texas
 Dependent Variable: Inpatient Uncompensated Care Cost Change

Variable	FOR-PROFIT		NON-PROFIT		
1999 SSHHI	-0.535**	-0.403*	-0.197	-0.163	
	(0.199)	(0.199)	(0.246)	(0.174)	
SSHHI Change	-0.656**	-1.076***	0.918	0.841	
	(0.313)	(0.346)	(1.325)	(1.301)	
Self-Pay CMI Change	-0.232	-0.326	0.116	0.126	
	(0.391)	(0.416)	(0.315)	(0.329)	
CS Residual	0.026	0.030	-0.130	-0.127	
	(0.113)	(0.113)	(0.153)	(0.156)	
Wage Change	-1.567	-1.630*	-0.127	-0.128	
	(1.034)	(0.823)	(0.783)	(0.753)	
Poverty Change	0.710**		0.176		
	(0.335)		(0.714)		
Population Change		1.259**		1.526	
		(0.617)		(1.516)	
Median Income Change		2.887		-0.459	
		(2.009)		(2.502)	
Teach	-0.047	-0.014	-0.218	-0.204	
	(0.132)	(0.131)	(0.146)	(0.154)	
# of Pub. Hosp.	0.103*	0.155**	0.089	0.084	
	(0.060)	(0.062)	(0.060)	(0.068)	
Type Change	0.007	0.121			
	(0.192)	(0.199)			
N	45	45	69	69	
F	1028.627	303.555	3.329	3.050	
R		² 0.670	0.699	0.208	0.207
Adj-R		² 0.588	0.613	0.104	0.089

Huber-White robust standard errors in parentheses

* p<.1; ** p<.05; *** p<.01

Table 8
 State: Texas
 Dependent Variable: Outpatient Uncompensated Care Cost Change

Variable	FOR-PROFIT		NON-PROFIT		
1999 SSHHI	-0.558***	-0.428**	-0.025	0.085	
	(0.152)	(0.166)	(0.194)	(0.202)	
SSHHI Change	-0.051	-0.417	0.050	-0.187	
	(0.230)	(0.250)	(1.697)	(1.584)	
CS Residual	-0.033	-0.044	-0.205	-0.220	
	(0.084)	(0.090)	(0.145)	(0.143)	
Wage Change	-1.109	-1.232*	1.501*	1.235	
	(0.792)	(0.676)	(0.897)	(0.914)	
Poverty Change	0.327		-0.282		
	(0.352)		(0.774)		
Population Change		0.446		1.636	
		(0.618)		(1.662)	
Median Income Change		3.475*		1.685	
		(1.749)		(2.908)	
Teach	-0.128	-0.103	-0.161	-0.135	
	(0.149)	(0.145)	(0.183)	(0.191)	
# of Pub. Hosp.	0.096**	0.149**	0.049	0.046	
	(0.047)	(0.057)	(0.058)	(0.064)	
Type Change	-0.045	0.057			
	(0.126)	(0.126)			
N	51	51	77	77	
F	32.133	29.391	5.330	4.970	
R		² 0.692	0.720	0.278	0.301
Adj-R		² 0.635	0.661	0.206	0.220

Huber-White robust standard errors in parentheses

* p<.1; ** p<.05; *** p<.01

Table 9
 State: Florida
 Dependent Variables: Self-Pay Price Change & Inpatient
 Uncompensated Care Cost Change
 Excluding hospitals with |(SSHHI Change)*10,000|<25

Variable	Self-Pay Price Change		IP Uncomp. Care Cost Change		
1999 SSHHI	-0.144 (0.197)	-0.077 (0.172)	-0.304* (0.179)	-0.155 (0.166)	
SSHHI Change	0.658 (0.558)	-0.399 (0.861)	0.047 (0.802)	-0.243 (0.929)	
Self-Pay CMI Change	-0.069 (0.453)	0.048 (0.395)	-0.592 (0.467)	-0.760 (0.556)	
CS Residual	-0.648*** (0.099)	-0.672*** (0.093)	-0.103 (0.080)	-0.107 (0.087)	
Wage Change	1.553** (0.748)	2.084** (0.803)	0.840 (0.646)	1.016 (0.750)	
Poverty Change	0.129 (0.885)		-1.584 (0.952)		
Population Change		2.143 (1.964)		-0.470 (2.235)	
Median Income Change		-4.700 (2.941)		-0.976 (3.158)	
Teach	-0.293 (0.524)	-0.242 (0.445)	-0.047 (0.129)	0.016 (0.159)	
# of Pub. Hosp.	0.002 (0.033)	0.002 (0.030)	-0.013 (0.025)	-0.026 (0.031)	
Type Change	0.244 (0.198)	0.050 (0.218)	-0.325** (0.152)	-0.437** (0.177)	
Profit	0.011 (0.110)	0.064 (0.117)	0.244* (0.139)	0.265* (0.147)	
N	55	55	55	55	
F	15.020	15.147	9.170	7.312	
R ²		0.664	0.682	0.546	0.523
Adj-R ²		0.589	0.602	0.445	0.403

Huber-White robust standard errors in parentheses

* p<.1; ** p<.05; *** p<.01

Appendix A: Data and Variable Construction

Florida:

Hospital Universe²⁹

All short-term general acute care (hospital type = A or D) hospitals in the state of Florida operating between 1999 and 2002, excluding the following:

1. Hospitals in the Hill-Burton program in 1999 or 2002 (i.e., hospitals that list positive Hill-Burton inpatient deductions in 1999 or 2002).
2. Hospitals with fewer than 100 self-paying inpatients in 1999 or 2002.
3. Hospitals for which financial information is not available.
4. Hospitals that listed no revenue from self-paying inpatients or no bad debt or charity care for inpatients in 1999 or 2002.

Note: All short-term general acute care hospitals are included in the calculation of the SSHHI, even if they do not satisfy 1-4.

Variables:(XX = 99, 02)

Name	Description	Source
		2).inpainpatient deductio

²⁹

For inpatient only; see footnote 19 for outpatient hospital universe.

cmi_selfpayXX	Case Mix Index for self-paying patients	Florida Hospital Inpatient Data, AHCA and the Federal Register
profit	=1 if the hospital is investor-owned in 1999, else = 0	Florida Hospital Financial Data, AHCA
public_num	number of public hospitals in the hospital's county	Florida Hospital Financial Data, AHCA
teach	= 1 if the hospital is a teaching hospital in 1999, else = 0	Florida Hospital Financial Data, AHCA
type-change	= 1 if the hospital's ownership type changed between 1999 and 2002, else = 0	Florida Hospital Financial Data, AHCA
povertyXX	number of persons below the poverty level (unique to each county)	Small Area Income and Poverty Estimates, U.S. Census Bureau
medhhincXX	median household income (unique to each county)	Small Area Income and Poverty Estimates, U.S. Census Bureau
popXX	population (unique to each county)	U.S. Census Bureau
wageXX	mean hourly wage, healthcare practitioners and technical occupations (unique to each MSA) (For Ocala MSA, mean hourly wage of registered nurses used; For rural areas, statewide mean hourly wage for healthcare practitioners and technical occupations used)	Occupational Employment Statistics, Bureau of Labor Statistics
rural	=1 if the hospital is not located in an MSA	Florida Hospital Financial Data, AHCA

³⁰ For inpatient only; see footnote 19 for outpatient hospital universe.

systemXX	owner of the hospital	Texas Department of Health, Annual Survey of Hospitals and the AHA Guide to Hospitals, 1999-2000 and 2002-2003 editions
cmi_selfpayXX	Case Mix Index for self-paying patients	Texas Health Care Information Council, Hospital Inpatient DischarDischar
cmi_selfpayXXpat a4		T(p4 -14_ numls and the AHA)Tjnumb (Guidp4 -14o cmi_selfpayXXpat a4

wageXX	mean hourly wage, healthcare practitioners and technical occupations (unique to each MSA) (For Victoria MSA, mean hourly wage of registered nurses used; For Galveston PMSA, mean hourly wage for Houston used; For rural areas, statewide mean hourly wage for healthcare practitioners and technical occupations used)	Occupational Employment Statistics, Bureau of Labor Statistics
rural	=1 if the hospital is not located in an MSA	Texas Department of Health, Annual Survey of Hospitals

160



³¹ The SSHHI has been multiplied by 10,000 for ease of interpretation.

References:

- Antwi, Y., Gaynor, M., and Vogt, W. (2006), "A Competition Index for Differentiated Products Oligopoly with an Application to Hospital Markets," working paper
- Bazzoli, G.J., Kang, R., Hasnain-Wynia, R., Lindrooth, R.C. (2005), "An Update on Safety-Net Hospitals: Coping with the Late 1990s and Early 2000s," *Health Affairs* v24(#4, July/August), pp. 1047-1056
- Capps, C., Dranove, D., Greenstein, S., and Satterthwaite, M. (2002), "Antitrust Policy and Hospital Mergers: Recommendations for a New Approach," *The Antitrust Bulletin*, Winter 2002, pp. 677-714
- Capps, C. and Dranove, D. (2004), "Hospital Consolidation and Negotiated HMO Prices," *Health Affairs* v23 (#2, March/April), pp. 175-181
- Frank, R.G. and Salkever, D.S. (1991), "The Supply of Charity Services by Nonprofit Hospitals: Motives and Market Structure," *RAND Journal of Economics* v22(#3), pp.430-445
- Gaynor, M. and Vogt, W. (2003), "Competition Among Hospitals," *RAND Journal of Economics* v34 (#4, Winter 2003), pp. 764-785
- Gruber, J. (1994), "The Effect of Competitive Pressure on Charity: Hospital Responses to Price Shopping in California," *Journal of Health Economics* v38, pp.183-212
- Guterman, S. (2006), "Specialty Hospitals: A Problem or a Symptom?" *Health Affairs* v25 (#1, January/February), pp.95-105
- Herring, B. (2005), "The Effect of the Availability of Charity Care to the Uninsured on the Demand for Private Health Insurance," *Journal of Health Economics* v24, pp.225-252
- Krishnan, R. (2001), "Market Restructuring and Pricing in the Hospital Industry," *Journal of Health Economics* v20, pp. 213-237
- Mann, J., Melnick, G., Bamezai, A., and Zwanziger, J. (1995), "Uncompensated Care: Hospitals' Responses to Fiscal Pressures," *Health Affairs*, Spring 1995, pp. 263-270
- Mann, J., Melnick, G., Bamezai, A., and Zwanziger, J. (1997), "A Profile of Uncompensated Hospital Care, 1983-1995," *Health Affairs*, July/August 1997, pp. 223-232
- Medicare Payment Advisory Commission (MEDPAC) (2005), "Report to the Congress: Physician-Owned Specialty Hospitals," March 2005, [http://www.medpac.gov/publication/Physician-Owned Specialty Hospitals: ona-26224 a Sym](http://www.medpac.gov/publication/Physician-Owned%20Specialty%20Hospitals%20-%20March%202005.pdf)

