Market entry

Paul Schrimpf

UBC
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Part I

Overview of market entry

1 Introduction

Starc (2014)

2 Bresnahan and Reiss (1991)

3 Magnolfi et al. (2024)

Background and Data

Entry Model

Results

4 Other applications

References

- Reviews:
  - Aguirregabiria (2021) chapter 5
  - Sutton (1991) theory
  - Aradillas-López (2020), Kline, Pakes, and Tamer (2021) econometrics
  - Levin (2009)
- Key papers:
  - Bresnahan and Reiss (1991)

Section 1

Introduction

Introduction 1

- Models of entry:
  - Dependent variable = firm decision to operate or not in a market
    - Enter industry, open new store, introduce new product, release a new movie, bid in an auction
  - Sunk cost from being active in market
  - Payoff of being active depends on how many other firms are in the market (game)

$$a_{im} = 1\{\Pi_{im}(N_m, X_{im}, \epsilon_{im}) \geq 0\}$$

- Estimate Π using revealed preference
- Static models: entry $\approx$ being in active in market; not transition in/out

Why estimate models of entry?

- Why not just estimate payoff function using demand and production estimation techniques?
  - Answers new questions: source of market power
  - Efficiency: entry conditions provide additional information about payoffs, so using them can give us more precise estimates
  - Identification: some parameters (e.g. fixed costs) can only be identified from entry
  - Requires less data: price and quantity data not needed for some entry models
  - Controlling for selection

Starc (2014) 1

- What are the sources and consequences of insurer market power?
- Sutton (1991):
  - Model with price competition & fixed costs implies number of firms $\to\infty$ as market size $\to\infty$
  - Model with price competition & endogenous fixed costs implies number of firms $\to$ constant as market size $\to\infty$
  - Illustrative simplified model from Schmalensee (1992)
    - Exogenous, p, c, endogenous A_i (advertising)

$$\pi_i = (p-c)S\frac{A_i^e}{\sum_{j=1}^{N} A_j^e} - A_i - \sigma$$

    - Symmetric Nash equilibrium:

$$0 = (1/N^*)(1-e) + (1/N^*)^2 e - (\sigma/S)(1/(P-c))$$

if $e \in (1, 2]$, then $N^* \to e/(e-1)$ as $S \to \infty$

- Entry model:
  - Mutual of Omaha: fixed cost of entry (including advertising) in market m is Θ_{Mm}
  - Assume:
    1. Mutual of Omaha is profitable $\Pi_{Mm}(1,1) - \Theta_{Mm} \geq 0$
    2. It is not profitable for another firm to mimic Mutual of Omaha and enter $\Pi_{Mm}(1,2) - \Theta_{Mm} \leq 0$

    implies $\mathrm{E}[\Pi_{Mm}(2,1)] \leq \mathrm{E}[\theta_{Mm}] \leq \mathrm{E}[\Pi_{Mm}(1,1)]$
  - Similar for United Health, but they pay a single national suck cost Φ_U each year and

$$\mathrm{E}[\sum_m \Pi_{Um}(2,1)] \leq \mathrm{E}[\Phi_U] \leq \mathrm{E}[\sum_m \Pi_{Um}(1,1)]$$

Source of market power

TABLE A7 Fixed and Sunk Cost Estimates

	Lower Bound	Upper Bound
Sunk cost,	\$99, 261, 645.01	\$487, 935, 210.41
UnitedHealth	(\$1, 530, 902, 861, 706.31)	(\$23, 031, 614, 127.02)
Fixed cost,	\$445, 010.32	\$796, 342.56
Mutual of Omaha	(\$225, 593.04)	(\$3, 578, 033.82)

TABLE A8 Marketing Expenditure and Advertising Value

	United Health	Mutual of Omaha
L.B. of sunk (fixed) cost/consumer	\$23.65	\$8.37
U.B. of sunk (fixed) cost/consumer	\$73.09	\$14.81
Average marginal cost/consumer	\$98.27	\$238.67
L.B. of total marketing cost/consumer	\$121.92	\$247.05
U.B. of total marketing cost/consumer	\$171.36	\$253.48

Notes: Compensating variation is calculated as the average across consumers within a market using the standard log-sum formula; the number reported is the median across markets.

Section 2

Bresnahan and Reiss (1991)

Bresnahan and Reiss (1991)

- Can learn a lot from market entry with very limited data
- Cross-section of isolated markets where we observe
  - Number of firms
  - Some market characteristics (prices and quantities not needed)
- Identify:
  - Fixed costs
  - Degree of competition: payoffs $= f($number of firms$)$

Motivating theory

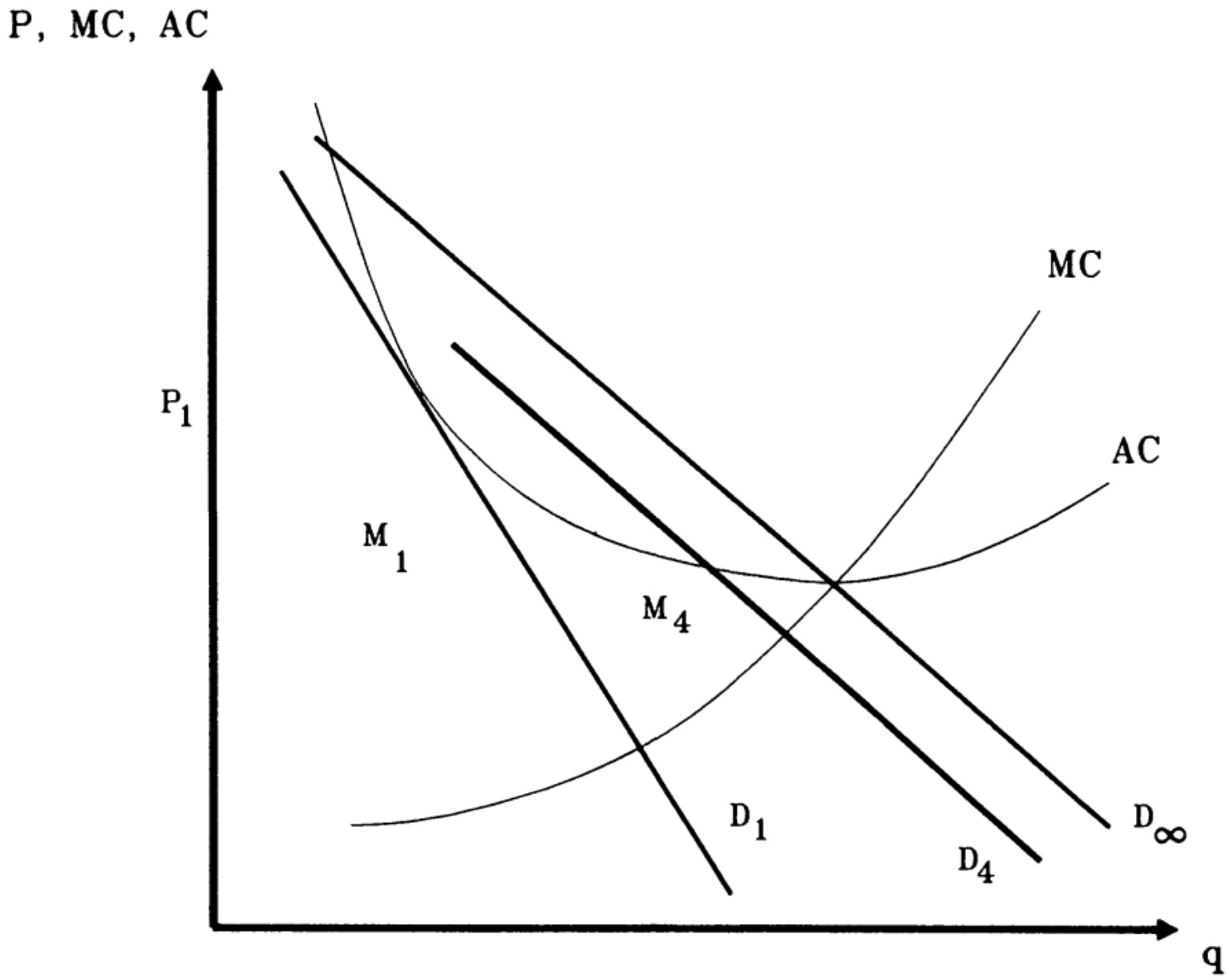


FIG. 1.—Breakeven firm demand and margins

Motivating theory

- Demand $= d(P) \underbrace{S}_{\text{market size}}$
- Monopolist entry:

$$0 = (P_1 - AVC(q_1))d(P_1)S_1 - F$$

$$S_1 = \frac{F}{(P_1 - AVC(q_1))d(P_1)}$$

- Symmetric market with n firms, demand per firm = $d(P)S/n$, entry threshold for nth firm

$$S_n = \frac{F}{(P_n - AVC(q_n))d(P_n)}$$

- P_n, q_n, depend on "competitive conduct" (form of competition, residual demand for firm who deviates from equilibrium P_n)
- As $n \to \infty$, $S_n/n \to s_\infty =$ minimal market size per firm to support entry when P, q competitive
- S_{n+1}/S_n measures how competitive conduct changes

Setting

- Questions:
  - Degree of competition: how fast profits decline with n_m
  - How many entrants needed to achieve competitive equilibrium (contestable markets)
- Data:
  - Retail and professional industries (doctors, dentists, pharmacies, car dealers, etc.), treat each industry separately
  - M markets
  - n_m firms per market
  - S_m market size
  - x_m market characteristics

Model 1

- N potential entrants
- Profit of each firm when n active $= \Pi_m(n)$
  - Π_m decreasing in n
- Equilibrium:

$$\Pi_m(n_m) \geq 0 \text{ and } P_m(n_m + 1) < 0$$

- Profit function:

$$\begin{aligned}\Pi_m(n) &= \underbrace{V_m(n)}_{\text{variable}} - \underbrace{F_m(n)}_{\text{fixed}} \\ &= S_m v_m(n) - F_m(n) \\ &= S_m \left(x_m^D \beta - \alpha(n) \right) - \left(x_m^c \gamma + \delta(n) + \epsilon_m \right)\end{aligned}$$

where

- $\alpha(1) \leq \alpha(2) \leq \cdots \leq \alpha(N)$

Model 2

- $\delta(1) \leq \delta(2) \leq \cdots \leq \delta(N)$
  - Entry deterrence, firm heterogeneity, real estate prices
- Key difference between variable and fixed profits is that variable depend on S_m, fixed do not

Estimation 1

- Parameters $\theta = (\beta, \gamma, \alpha, \delta)$
- MLE

$$\hat{\theta} = \arg\max_{\theta} \sum_{m=1}^{M} \log \mathrm{P}(n_m | x_m, S_m; \theta)$$

- Assume $\epsilon_m \sim N(0,1)$, independent of x_m, S_m

$$\begin{aligned}
\mathrm{P}(n|x_m, S_m; \theta) =& \mathrm{P}\left(\Pi_m(n) \geq 0 > \Pi_m(n+1)\right) \\
=& \mathrm{P}\begin{pmatrix} S_m x_m^D \beta - x_m^C \gamma - S_m \alpha(n) - \delta(n) \geq \epsilon \\ \epsilon > S_m x_m^D \beta - x_m^C \gamma - S_m \alpha(n+1) - \delta(n+1) \end{pmatrix} \\
=& \\
=& \Phi\left(S_m x_m^D \beta - x_m^C \gamma - S_m \alpha(n) - \delta(n)\right) - \\
& - \Phi\left(S_m x_m^D \beta - x_m^C \gamma - S_m \alpha(n+1) - \delta(n+1)\right)
\end{aligned}$$

Data

- 202 isolated local markets
  - Population 500-75,000
  - $\geq$ 20 miles from nearest town of 1,000+
  - $\geq$ 100 miles from city of 100,000+
- 16 industries: retail and professions, each estimated separately

TABLE 3

SAMPLE MARKET DESCRIPTIVE STATISTICS

Variable	Name	Mean	Standard Deviation	Min	Max
Firm counts:					
Doctors	DOCS	3.4	5.4	.0	45.0
Dentists	DENTS	2.6	3.1	.0	17.0
Druggists	DRUG	1.9	1.5	.0	11.0
Plumbers	PLUM	2.2	3.3	.0	25.0
Tire dealers	TIRE	2.6	2.6	.0	13.0
Population variables (in thousands):					
Town population	TPOP	3.74	5.35	.12	45.09
Negative TPOP growth	NGRW	−.06	.14	−1.34	.00
Positive TPOP growth	PGRW	.49	1.05	.00	7.23
Commuters out of the county	OCTY	.32	.69	.00	8.39
Nearby population	OPOP	.41	.74	.01	5.84
Demographic variables:					
Birth ÷ county population	BIRTHS	.02	.01	.01	.04
65 years and older ÷ county population	ELD	.13	.05	.03	.30
Per capita income ($1,000's)	PINC	5.91	1.13	3.16	10.50
Log of heating degree days	LNHDD	8.59	.47	6.83	9.20
Housing units ÷ county population	HUNIT	.46	.11	.29	1.40
Fraction of land in farms	FFRAC	.67	.35	.00	1.27
Value per acre of farmland and buildings ($1,000's)	LANDV	.30	.23	.07	1.64
Median value of owner-occupied houses ($1,000's)	HVAL	32.91	14.29	9.90	106.0

SOURCE.—Firm counts: American Business Lists, Inc.; population variables: U.S. Bureau of the Census (1983) and *Rand McNally Commercial Atlas and Marketing Guide* (annual); demographic variables: U S Bureau of the Census (1983).

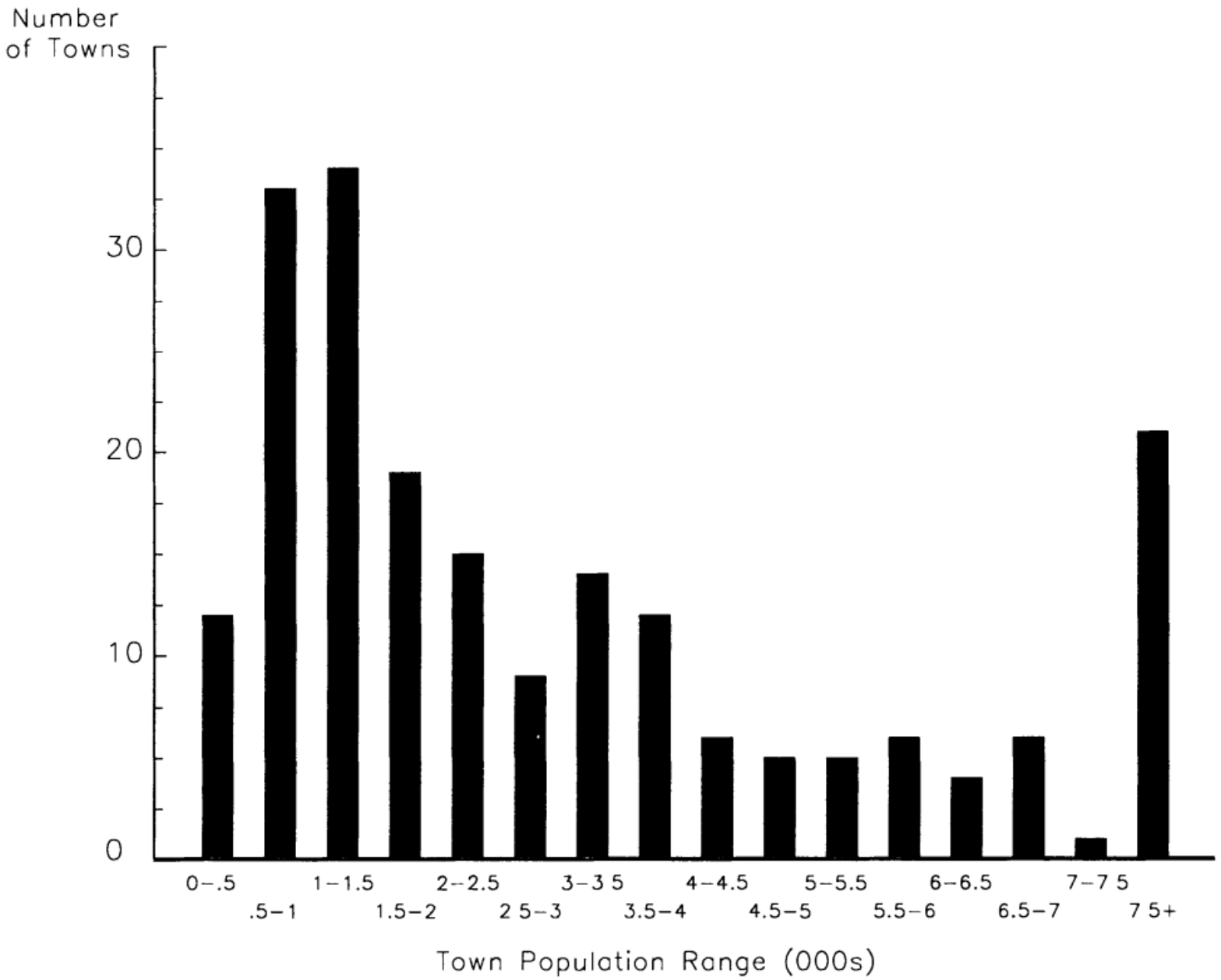


FIG. 2.—Number of towns by town population

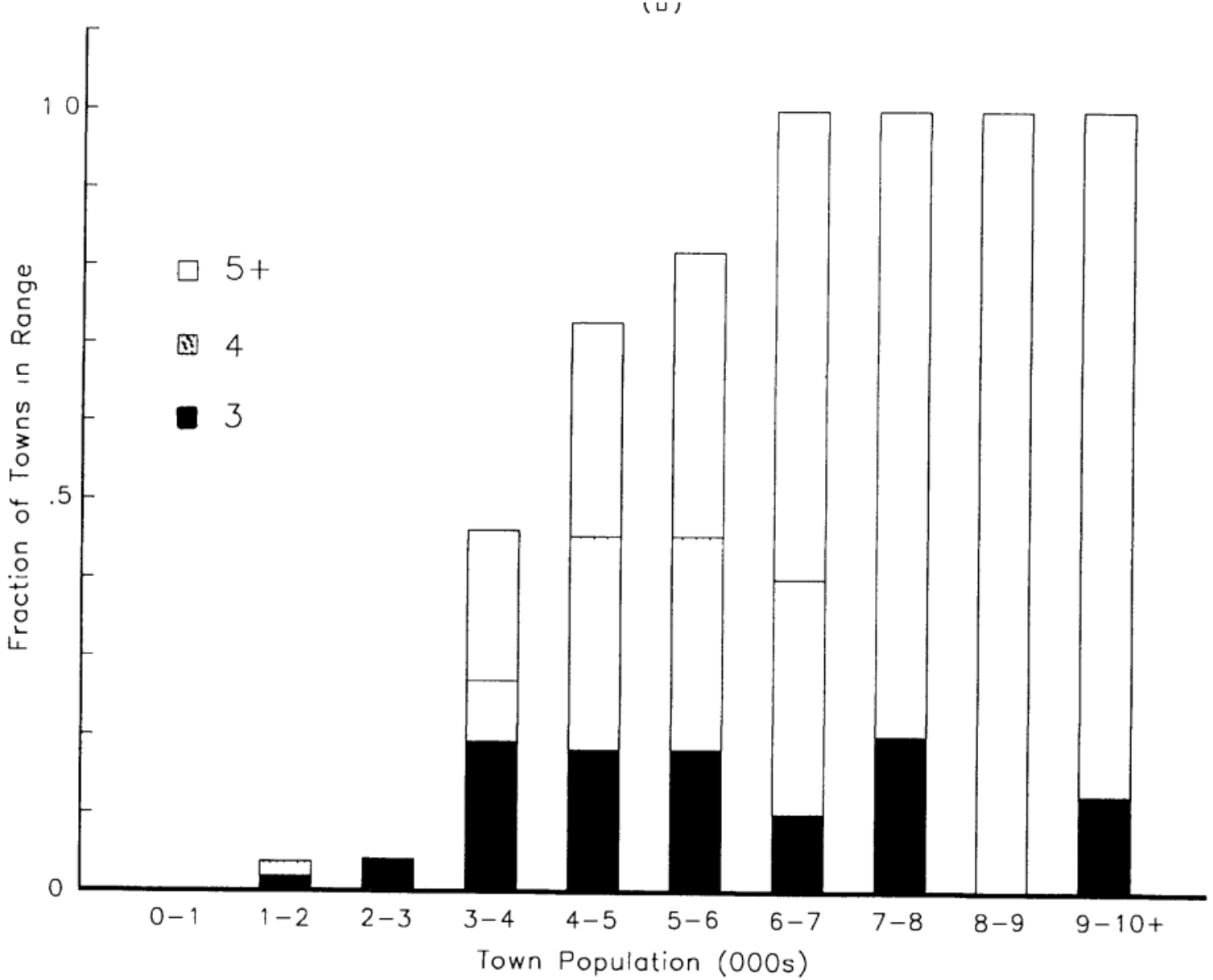


FIG. 3.—Dentists by town population

Results

- For most industries, $\alpha(n)$ and $\delta(n)$ increase with n
- Define $S(n) =$ minimal S such that n firms enter

$$S(n) = \frac{x_m^C \gamma + \delta(n)}{x_m^D \beta - \alpha(n)}$$

  - Varies across industries
- $\frac{S(n)}{n} \approx$ constant for $n \geq 5$
  - Contestable markets (Baumol, Panzar, and Willig, 1982) : an industry can be competitive even with few firms if there is easy entry

TABLE 5

A. Entry Threshold Estimates

Profession	Entry Thresholds (000's)					Per Firm Entry Threshold Ratios			
	S_1	S_2	S_3	S_4	S_5	s_2/s_1	s_3/s_2	s_4/s_3	s_5/s_4
Doctors	.88	3.49	5.78	7.72	9.14	1.98	1.10	1.00	.95
Dentists	.71	2.54	4.18	5.43	6.41	1.78	.79	.97	.94
Druggists	.53	2.12	5.04	7.67	9.39	1.99	1.58	1.14	.98
Plumbers	1.43	3.02	4.53	6.20	7.47	1.06	1.00	1.02	.96
Tire dealers	.49	1.78	3.41	4.74	6.10	1.81	1.28	1.04	1.03

B. Likelihood Ratio Tests for Threshold Proportionality

Profession	Test for $s_4 = s_5$	Test for $s_3 = s_4 = s_5$	Test for $s_2 = s_3 = s_4 = s_5$	Test for $s_1 = s_2 = s_3 = s_4 = s_5$
Doctors	1.12 (1)	6.20 (3)	8.33 (4)	45.06* (6)
Dentists	1.59 (1)	12.30* (2)	19.13* (4)	36.67* (5)
Druggists	.43 (2)	7.13 (4)	65.28* (6)	113.92* (8)
Plumbers	1.99 (2)	4.01 (4)	12.07 (6)	15.62* (7)
Tire dealers	3.59 (2)	4.24 (3)	14.52* (5)	20.89* (7)

Note.—Estimates are based on the coefficient estimates in table 4. Numbers in parentheses in pt. B are degrees of freedom.
* Significant at the 5 percent level.

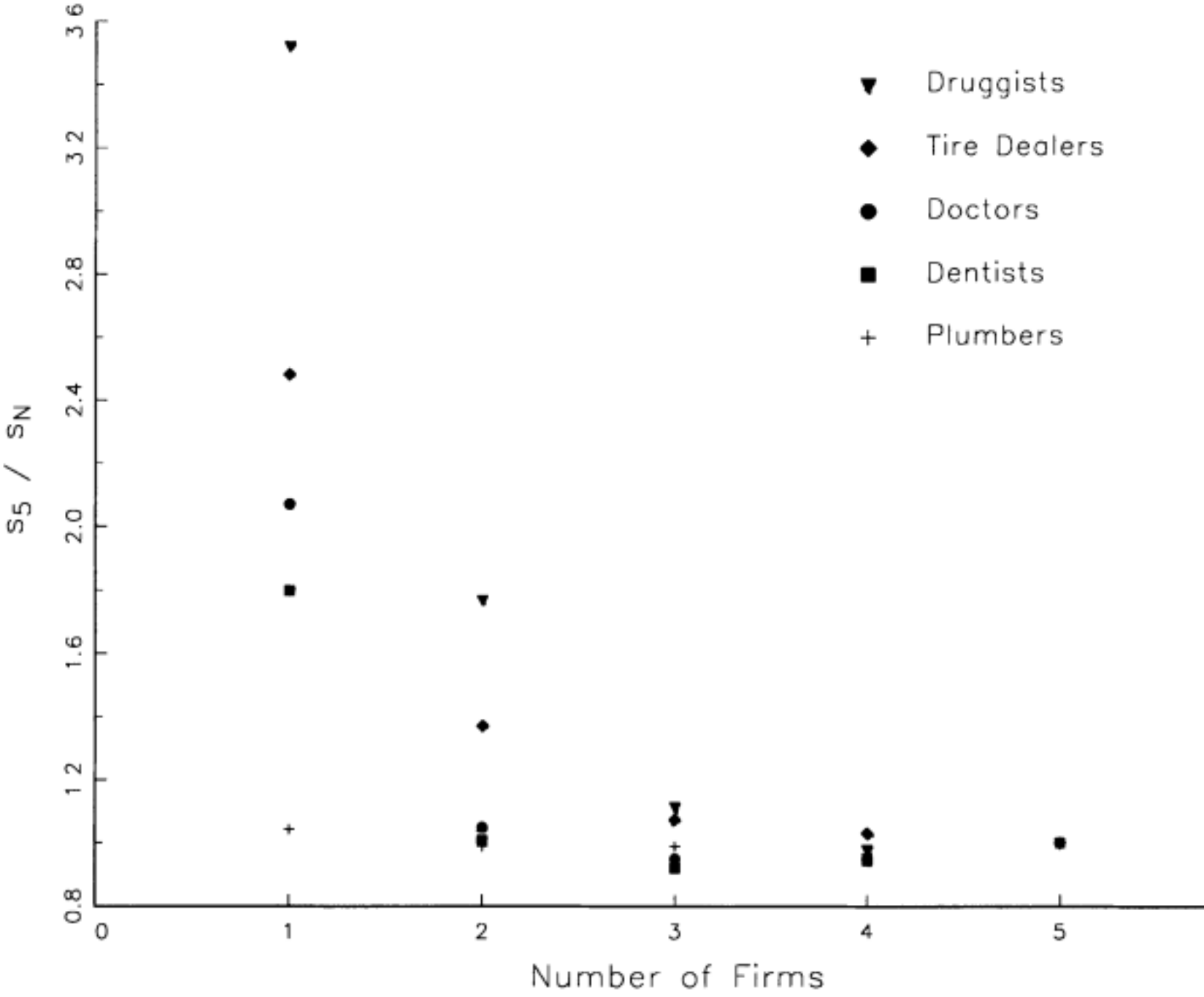


FIG. 4.—Industry ratios of s_5 to s_N by N

Further evidence - prices

TABLE 10

TIRE PRICE SAMPLE DESCRIPTIVE STATISTICS

	Number of Tire Dealers in the Market						
	1	2	3	4	5	1.5	Urban
Candidate phone listings	39	66	48	64	75	*	200+
Surveyed by us	36	22	19	28	21	20	19
At listed number	32	19	19	24	21	17	18
Would respond	28	19	19	23	20	14	17
Total prices quoted	76	52	50	64	49	36	62
Usable price quotations	42	31	40	57	45	17	59
	Sample Means						
Price	54.9	55.7	54.4	51.6	52.0	53.8	45.6
Tire mileage rating (000)	44.5	47.0	47.7	45.4	43.8	43.0	45.3
	Sample Medians						
Price	53.9	55.0	52.9	50.9	49.8	51.7	43.2
Tire mileage rating (000)	45	45	50	40	40	40	45

* Unknown.

Further evidence - prices

TIRE PRICE REGRESSIONS (N = 282)

	ORDINARY LEAST SQUARES		LEAST ABSOLUTE DEVIATIONS
VARIABLE NAME	(1)	(2)	(3)
Constant term	26.4	29.9	29.5
	(4.69)	(4.87)	(4.43)
Monopoly market dummy	1.88	.26	.54
	(2.12)	(2.33)	(2.12)
Duopoly market dummy	1.88	−.62	.96
		(2.42)	(2.30)
Triopoly market dummy	−1.80	−2.60	−2.12
	(2.05)	(2.34)	(2.11)
Quadropoly market dummy	−1.80	−3.36	−2.53
		(2.21)	(2.01)
Quintopoly market dummy	−1.80	−1.99	−2.00
		(2.22)	(2.01)
Urban market dummy	−12.1	−11.0	−11.4
	(2.62)	(2.62)	(2.38)
Mileage rating	.43	.38	.39
	(.05)	(.05)	(.05)
County retail wage	1.00	.62	.74
	(.53)	(.53)	(.49)
Other dummy variables	Michelin brand	11 brands	11 brands
Regression R^2	.43	.51	
F or χ^2 hypothesis tests:			
$\alpha_1 = \alpha_2$	.01	.01	1.1
$\alpha_3 = \alpha_4 = \alpha_5$	.68	.70	2.3
$\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5$	2.82*	2.86*	448*

NOTE.—The omitted category is all towns not satisfying our monopoly market definition. The numbers in parentheses are asymptotic standard errors.

* Significant at the 5 percent level.

Section 3

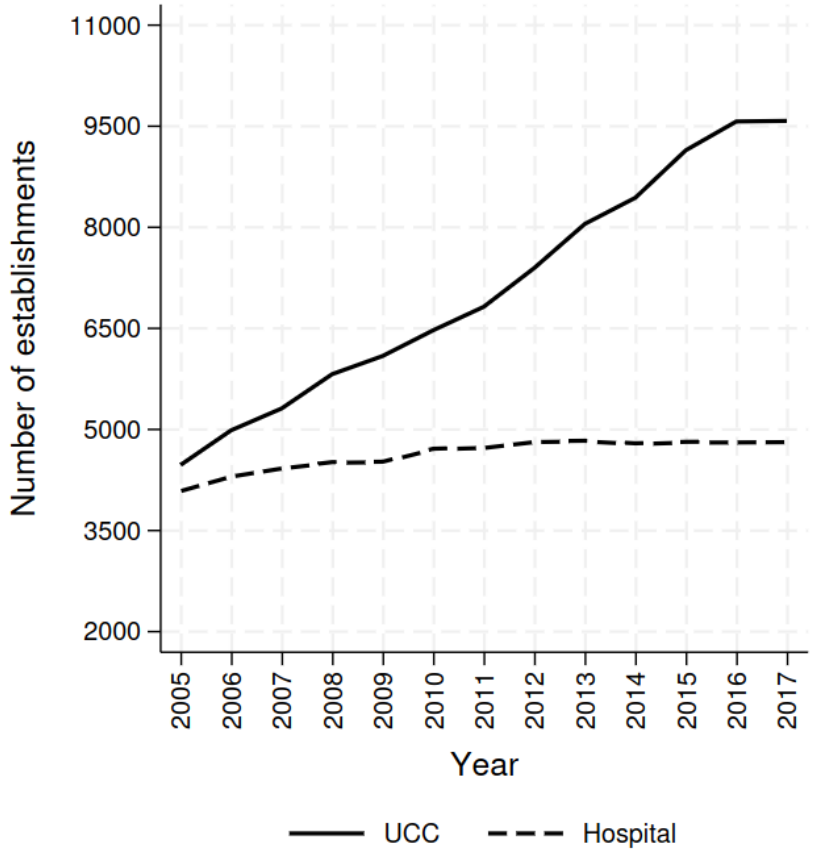
Magnolfi et al. (2024)

"The Rise of Urgent Care Centers: Implications for Competition and Access to Health Care"

Magnolfi et al. (2024)

Growth in Urgent Care Centers

FIGURE 1: Urgent Care and Hospital Sector Growth



Note: Data for UCCs come from the Your Economy Time Series (YTS) database, which contains establishment-level information on all businesses in the United States, matched to Solv Health. Data for hospitals come from CMS' Hospital Compare, which contains all Medicare-certified hospitals.

Introduction

- Questions:
  1. to what degree UCCs compete with each other and with hospitals and their affiliated UCCs
  2. whether UCCs' location decisions expand access in underserved markets
- Entry model of hospitals and UCCs
  - in spirit of Bresnahan and Reiss (1991)
  - Variation in Certificate-of-Need laws to identify effect of hospitals
  - Compare entry thresholds in typical to underserved markets

What are Urgent Care Centers?

- Urgent Care Centers:
  - Walk-in
  - Extended hours
  - imaging, testing, diagnostics, screening
  - physicians, nurses, radiology technicians
  - Entry requirements: physician licensing, malpractice insurance
- Hospitals:
  - Emergency: 2/3 of visits for conditions also treated by UCCs
  - Certificate-of-Need required for entry (regulations vary by state)
- Retail clinics:
  - Respiratory infections, vaccinations
  - Within retail store (CVS, Walmart) with normal business hours
  - Nurse practitioners

Data

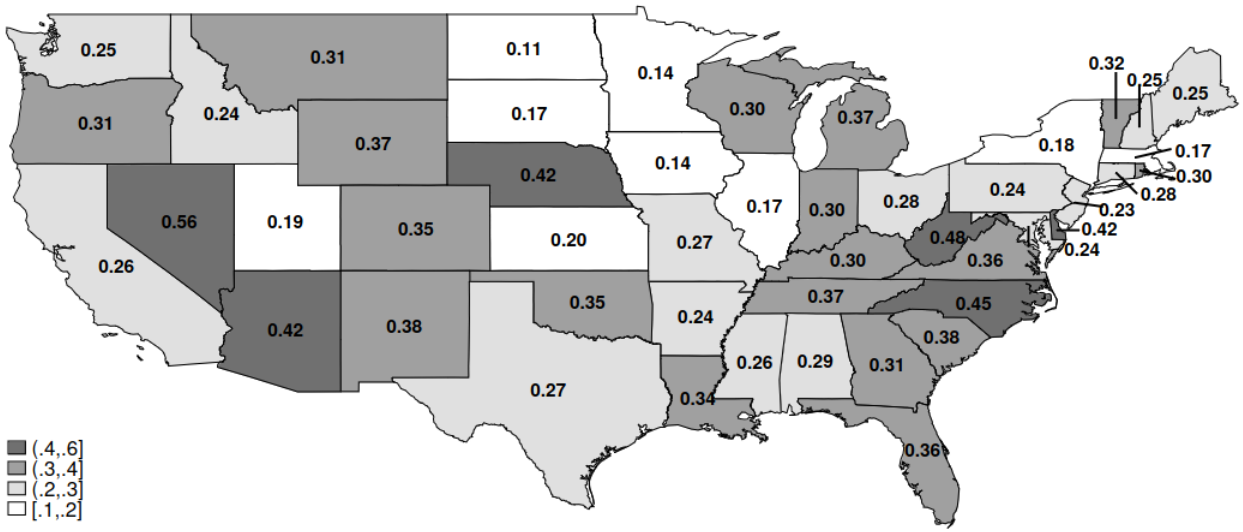
- YE Time Series establishments for US since 1997
- Hospital Compare database from CMS
- Demographics from ACS

TABLE 1: Market Characteristics by Number of UCCs

	Full sample	Number of UCCs			
		0	1	2	>=3
Population (1,000s)	47.9 (73.9)	18.5 (21.5)	46.2 (38.7)	64.3 (51.2)	146.7 (124)
Rural	0.38 (0.42)	0.51 (0.44)	0.25 (0.34)	0.20 (0.31)	0.10 (0.19)
Per cap. Income ($10K)	3.04 (1.14)	2.91 (1.11)	3.09 (1.17)	3.23 (1.16)	3.36 (1.11)
Hispanic	0.11 (0.16)	0.09 (0.14)	0.11 (0.16)	0.13 (0.16)	0.16 (0.17)
Black	0.01 (0.07)	0.02 (0.09)	0.01 (0.04)	0.01 (0.03)	0.01 (0.02)
High school or more	0.46 (0.06)	0.45 (0.06)	0.46 (0.06)	0.47 (0.05)	0.47 (0.05)
Age 65 and over	0.18 (0.06)	0.19 (0.06)	0.17 (0.06)	0.17 (0.05)	0.16 (0.05)
Uninsured	0.09 (0.05)	0.09 (0.06)	0.09 (0.05)	0.09 (0.05)	0.09 (0.05)
CMS wage index	0.97 (0.17)	0.96 (0.16)	0.99 (0.18)	0.99 (0.19)	1.00 (0.18)
Any hospital	0.53 (0.50)	0.42 (0.49)	0.59 (0.49)	0.66 (0.47)	0.80 (0.40)
Any AUCC	0.16 (0.37)	0.07 (0.26)	0.16 (0.37)	0.24 (0.43)	0.46 (0.50)
T	6,696	4,010	994	581	1,111

Note: Table presents means and, in parentheses, standard deviations, of market characteristics in the full sample and in subsamples conditional on the number of UCCs, and total number of markets in the final row. Rural, Hispanic, Black, high school or more, age 65 and over, and uninsured are proportions of total population. Any hospital is the fraction of markets in the sample with at least one hospital. Any AUCC is the fraction of markets in the sample with at least one hospital-affiliated UCC.

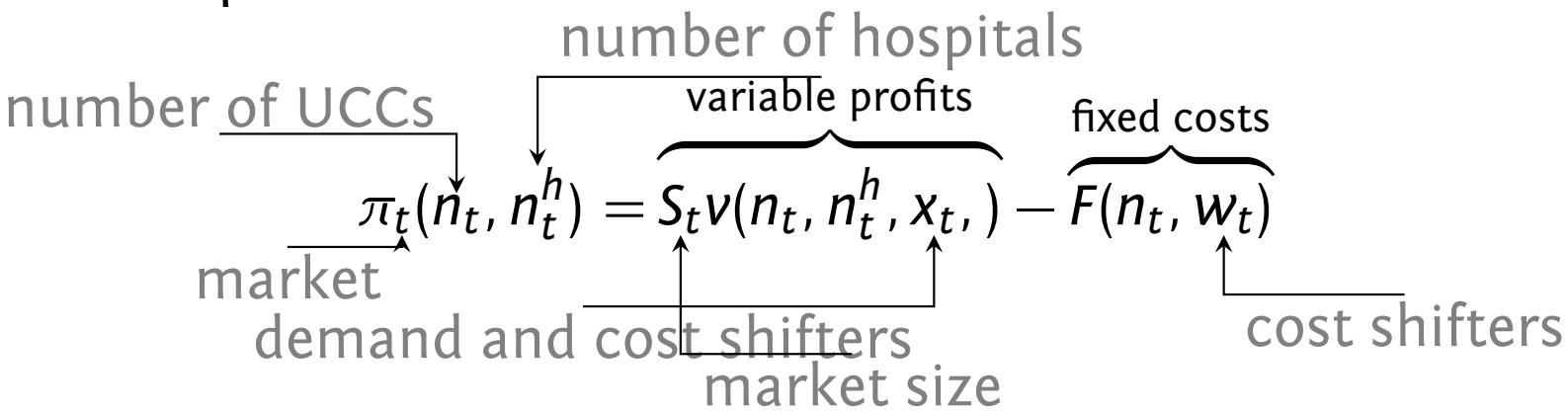
FIGURE 2: Number of UCCs per 10,000 State Residents in 2015



Note: Data come from the Your Economy Time Series (YTS) database, which contains establishment-level information on all businesses in the United States.

UCC Entry

- UCC profits:



Hospital Entry

- Hospital profits:

$$\pi_t^h(n_t^h) = \overbrace{V^h(n_t^h, x_t, S_t)}^{\text{variable profits}} - \overbrace{F^h(n_t^h, w_t, z_t)}^{\text{fixed costs}}$$

number of hospitals

demand and cost shifters

market size

cost shifters

hospital cost s

- Hospital entry does not respond to UCCs
- Cost shifter for hospitals excluded from UCC cost

Equilibrium and Entry Thresholds

- Number of UCCs

$$\pi(n_t, n_t^h) \geq 0 \geq \pi(n_t + 1, n_t^h)$$

- n_t firms requires size

$$S_t \geq \frac{F(n_t, w_t)}{v(n_t, n_t^h, x_t)}$$

- Minimal size per firm for n firms in market with average characteristics:

$$\tau_n = \frac{1}{n} \frac{F(n, \bar{w}_n)}{v(n, \bar{n}^h, \bar{x}_n)}$$

Estimation

- Profit Function parameterization

$$\pi_t(n_t, n_t^h) = S_t \left(x_t\theta_x + n_t^h\delta + \theta_1 - \sum_{i=2}^{n_t} \theta_i \right) - w_t\gamma_w - \gamma_1 - \sum_{i=2}^{n_t}$$

$$\pi_t^h(n_t^h) = S_t \left(x_t\theta_x^h + \theta_1^h \right) - w_t\gamma_w^h - z_t\gamma_z^h - \gamma_1^h + \epsilon_t^h$$

$$\begin{pmatrix} \epsilon_t \\ \epsilon_t^h \end{pmatrix} \sim N\left(0, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix}\right)$$

- $z_t = CON_t$ important for identification, especially ρ vs δ (exclusion in nonlinear simultaneous equations)
- Estimate by maximum likelihood

Sample restricted to isolated markets

Appendix Table 2: Market Characteristics by Number of UCCs

	Main sample	Number of UCCs			
		0	1	2	>=3
Population (1,000s)	96.0 (139)	15.2 (13.1)	55.6 (48.5)	81.7 (73.8)	219 (177)
Rural	0.34 (0.35)	0.52 (0.38)	0.34 (0.29)	0.29 (0.28)	0.13 (0.18)
Per cap. Income ($10K)	2.74 (0.63)	2.61 (0.60)	2.59 (0.50)	2.78 (0.52)	2.98 (0.69)
Hispanic	0.15 (0.18)	0.14 (0.18)	0.15 (0.21)	0.12 (0.15)	0.15 (0.18)
Black	0.04 (0.13)	0.08 (0.19)	0.02 (0.06)	0.02 (0.04)	0.01 (0.01)
High school or more	0.44 (0.05)	0.43 (0.06)	0.43 (0.05)	0.45 (0.04)	0.46 (0.04)
Age 65 and over	0.18 (0.06)	0.19 (0.06)	0.18 (0.05)	0.17 (0.04)	0.15 (0.04)
Uninsured	0.10 (0.05)	0.11 (0.06)	0.11 (0.05)	0.09 (0.04)	0.10 (0.04)
CMS wage index	0.95 (0.14)	0.96 (0.11)	0.94 (0.15)	0.94 (0.13)	0.95 (0.16)
Any hospital	0.90 (0.30)	0.81 (0.39)	0.96 (0.19)	0.97 (0.17)	0.96 (0.19)
Any AUCC	0.35 (0.48)	0.13 (0.33)	0.30 (0.46)	0.51 (0.50)	0.59 (0.49)
T	673	273	111	65	224

Note: Table presents means and, in parentheses, standard deviations, of market characteristics in the main estimation sample and in subsamples conditional on the number of UCCs, and total number of markets in the final row. Rural, Hispanic, Black, high school or more, age 65 and over, and uninsured are proportions of total population. Any hospital is the fraction of markets in the sample with at least one hospital. Any AUCC is the fraction of markets in the sample with at least one hospital-affiliated UCC.

TABLE 2: Entry Model Estimates

		Univariate		Bivariate				
				Hospitals		UCCs		
		coef	se	coef	se	coef	se	sim
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variable Profit Parameters:								
δ	Additional hospital presence	-23.6	(14.4)	—		-67.0	(19.2)	-20.5
θ_x, θ_x^h	Rural	52.2	(43.5)	117.5	(45.4)	59.5	(42.8)	4.0
	Income per capita	-39.9	(11.3)	0.6	(8.9)	-33.2	(11.1)	-9.8
	Hispanic	-69.3	(51.0)	-102.9	(32.6)	-77.7	(48.6)	-5.9
	Black	-300.9	(242.3)	422.1	(242.0)	-239.0	(240.7)	-13.5
	High school or more	382.8	(232.6)	-206.2	(156.4)	315.5	(225.8)	3.7
	Age 65 or more	308.0	(189.5)	356.2	(154.0)	294.3	(184.3)	3.7
	Uninsured	93.7	(192.6)	101.4	(151.6)	111.0	(185.5)	1.5
θ_n, θ_n^h	θ_1	373.4	(104.6)	143.4	(66.5)	390.0	(102.0)	—
	θ_2	279.5	(37.5)	—		254.8	(39.1)	—
	θ_3	5.4	(10.8)	—		3.4	(10.0)	—
Fixed Cost Parameters:								
γ_w, γ_w^h	CMS wage index	0.2	(0.5)	0.9	(0.5)	0.3	(0.5)	-0.3
γ_z	CON Laws	—		0.7	(0.2)	—		—
γ_n, γ_n^h	γ_1	1.3	(0.5)	0.4	(0.5)	1.3	(0.5)	—
	γ_2	0.0	(0.1)	—		0.1	(0.1)	—
	γ_3	0.5	(0.1)	—		0.5	(0.1)	—
ρ		—		—		0.4	(0.1)	—
T		673		673		673		

Note: Coefficients and standard errors of the univariate ordered probit of UCC entry are reported in columns 1 and 2, respectively. Coefficients and standard errors for the bivariate ordered probit are reported in columns 3 and 4 for hospitals, and in columns 5 and 6 for UCCs. Column 7 reports the simulated percent change in the mean number of UCCs across markets in the bivariate model due to a standard deviation increase in that covariate (or due to setting all hospital or rural indicators to 1).

Results

- Column (1) takes hospital entry as fixed, column (5) models hospital entry
- Column (3) as first stage
- Column (7) percent change in number UCCs from 1 standard deviation change in variables

Entry Thresholds

TABLE 3: Per-Firm Entry Thresholds and Ratios

	Univariate		Bivariate			
			Hospitals		UCCs	
	coef	se	coef	se	coef	se
	(1)	(2)	(3)	(4)	(5)	(6)
Thresholds:						
τ_1	30.83	(1.51)	55.47	(2.90)	31.16	(1.51)
τ_2	37.04	(1.84)	—		36.24	(1.69)
τ_3	37.99	(1.49)	—		38.77	(1.46)
Ratios:						
τ_2/τ_1	1.20	(0.08)	—		1.16	(0.08)
τ_3/τ_2	1.03	(0.03)	—		1.07	(0.03)
T	673		673		673	

Note: Table reports entry thresholds and entry ratios for UCCs from the univariate ordered probit in columns (1) and (2) and the bivariate ordered probit in columns (5)-(6). Columns (3) and (4) present the entry threshold for a monopoly hospital from the bivariate ordered probit. Entry thresholds are measured in 1,000s of people per-firm. Standard errors based on the delta method are reported in parenthesis.

Entry Thresholds

- Ratios decreasing, but > 1, implies more entry increases competition, but even with 3 still have market power
- Hospitals make UCCs more competitive (next table)

TABLE 4: Per-Firm Entry Thresholds and Ratios, Conditional on Number of Hospitals

	Number of hospitals			
	<=1		>1	
Thresholds:				
τ_1	30.31	(1.44)	34.91	(2.28)
τ_2	32.18	(1.87)	44.09	(3.12)
τ_3	30.97	(1.93)	44.01	(2.55)
Ratios:				
τ_2/τ_1	1.06	(0.07)	1.26	(0.10)
τ_3/τ_2	0.96	(0.03)	1.00	(0.04)
T	438		235	

Note: Table reports entry thresholds and entry ratios for UCCs from the bivariate ordered probit conditional on the number of hospitals and evaluated at the full sample means of demographics and CMS wage index. Entry thresholds are measured in 1,000s of people per-firm. Standard errors based on the delta method are reported in parenthesis.

Access to Care

TABLE 5: Per-Firm Entry Thresholds and Ratios in Demographic Subsamples

	Percent uninsured		Per capita income		SVI	
	High	Low	Low	High	High	Low
Thresholds:						
τ_1	29.74	33.09	30.56	32.06	31.44	31.51
	(1.95)	(2.34)	(1.69)	(2.73)	(2.04)	(2.32)
τ_2	35.08	35.58	31.37	36.96	31.24	39.01
	(2.60)	(2.25)	(1.98)	(2.67)	(1.96)	(2.82)
τ_3	29.88	39.71	32.93	38.35	31.95	40.81
	(2.19)	(1.96)	(1.67)	(2.41)	(1.93)	(2.50)
Ratios:						
τ_2/τ_1	1.18	1.08	1.03	1.15	0.99	1.24
	(0.13)	(0.09)	(0.09)	(0.11)	(0.09)	(0.13)
τ_3/τ_2	0.85	1.12	1.05	1.04	1.02	1.05
	(0.04)	(0.05)	(0.03)	(0.07)	(0.04)	(0.08)
T	336	337	337	336	336	337

Note: Table reports entry thresholds and ratios for UCCs from bivariate ordered probits estimated from subsamples of PCSAs: below median income, above median income, above median percent uninsured, below median percent uninsured, above median Social Vulnerability Index (SVI), and below median SVI. Entry thresholds are measured in 1,000s of people per-firm. Standard errors in parentheses.

Access to Care

- Entry thresholds about the same in subsamples

Robustness

- Market definition
- Model hospital affiliated UCCs separately

Conclusions

- Growth of UCCs has expanded access to care
- Evidence that UCCs have market power
- Future work: quality, cost savings, welfare

Section 4

Other applications

Other applications

- Supermarkets:
  - Bronnenberg, Dhar, and Dubé (2009)
  - Jia (2008)
  - Ellickson (2007)
- Airlines:
  - Berry (1992)
  - Ciliberto and Tamer (2009)
- Radio: Sweeting (2009)
- Urgent care: Magnolfi et al. (2024)

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