How Does Product Differentiation Affect Competition in HMO Markets?

Health Care and Competition Policy and Law Hearings:
Health Insurance Monopoly Issues — Competitive Effects

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Differentiation and Competition in HMO Markets

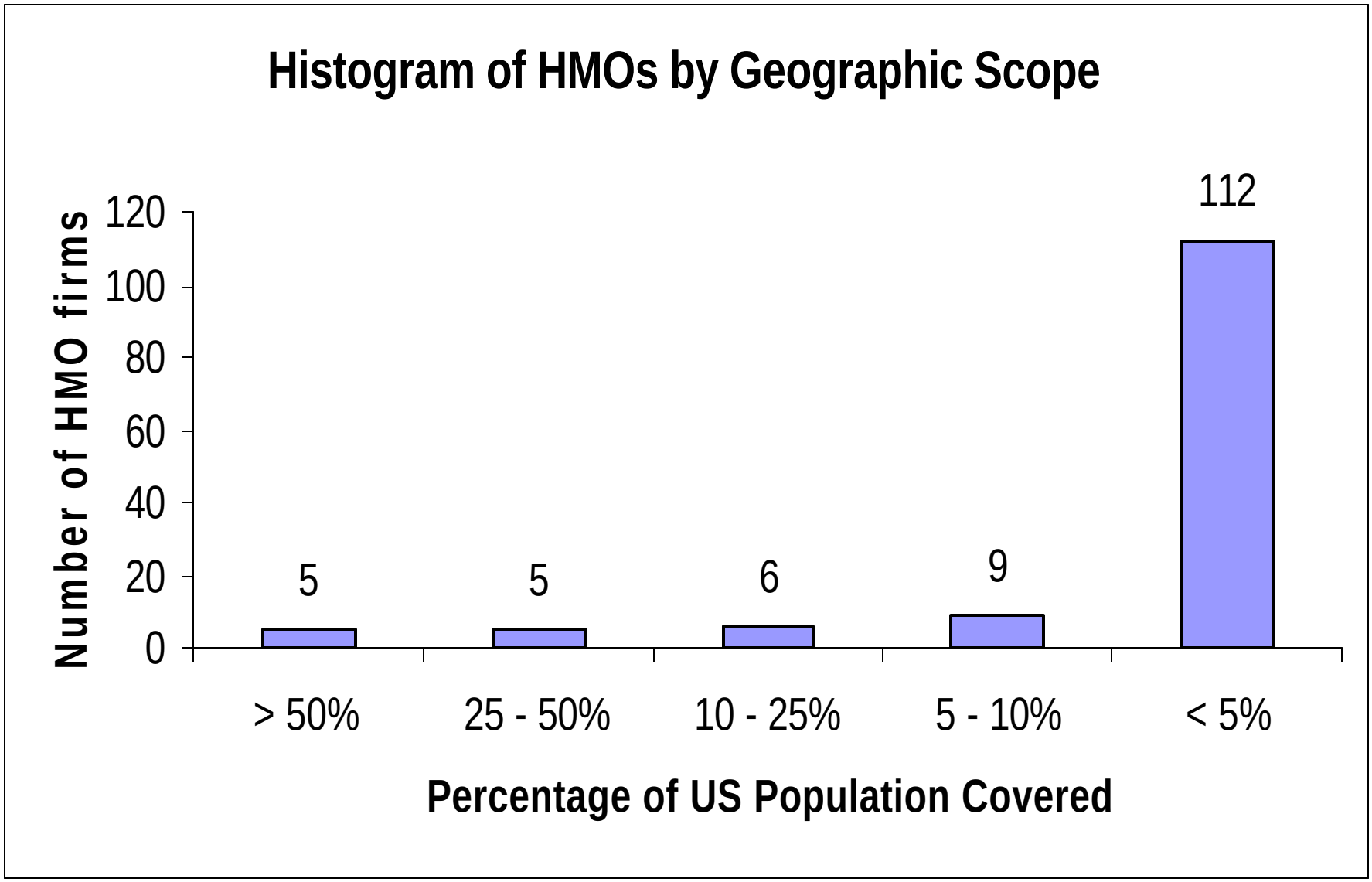
Question: Does product differentiation among HMOs reduce competition among the HMOs in individual markets?

1. Common measures of market competitiveness are difficult to calculate in this industry (and others) because of data limitations.

2. Concentration ratios/firm counts are hard to interpret, as they fail to account for differentiation and its potential effect on market competition.

3. Empirical framework measures the effect of additional competition, distinguishing between types of sellers based on scope of operation.

4. Applied to operating HMOs in a cross-section of geographic markets that vary in size and other demographic characteristics.


Histogram of HMOs by Geographic Scope
Number of HMO firms
120
100
80
60
40
20
0
5
5
6
9
112
> 50%
25 - 50%
10 - 25%
5 - 10%
< 5%
Percentage of US Population Covered

“Entry Threshold” Methodology (Bresnahan & Reiss)

Insight: Firms will enter a market so long as:

Entry Costs < Profit Margin * Quantity

- So, if margins fall with additional competition, quantity has to be higher to compensate (otherwise firms won’t enter).

- By comparing market size per firm across markets, we can infer the extent to which the presence of additional firms reduces margins.

"Entry Threshold" Methodology (Bresnahan & Reiss)

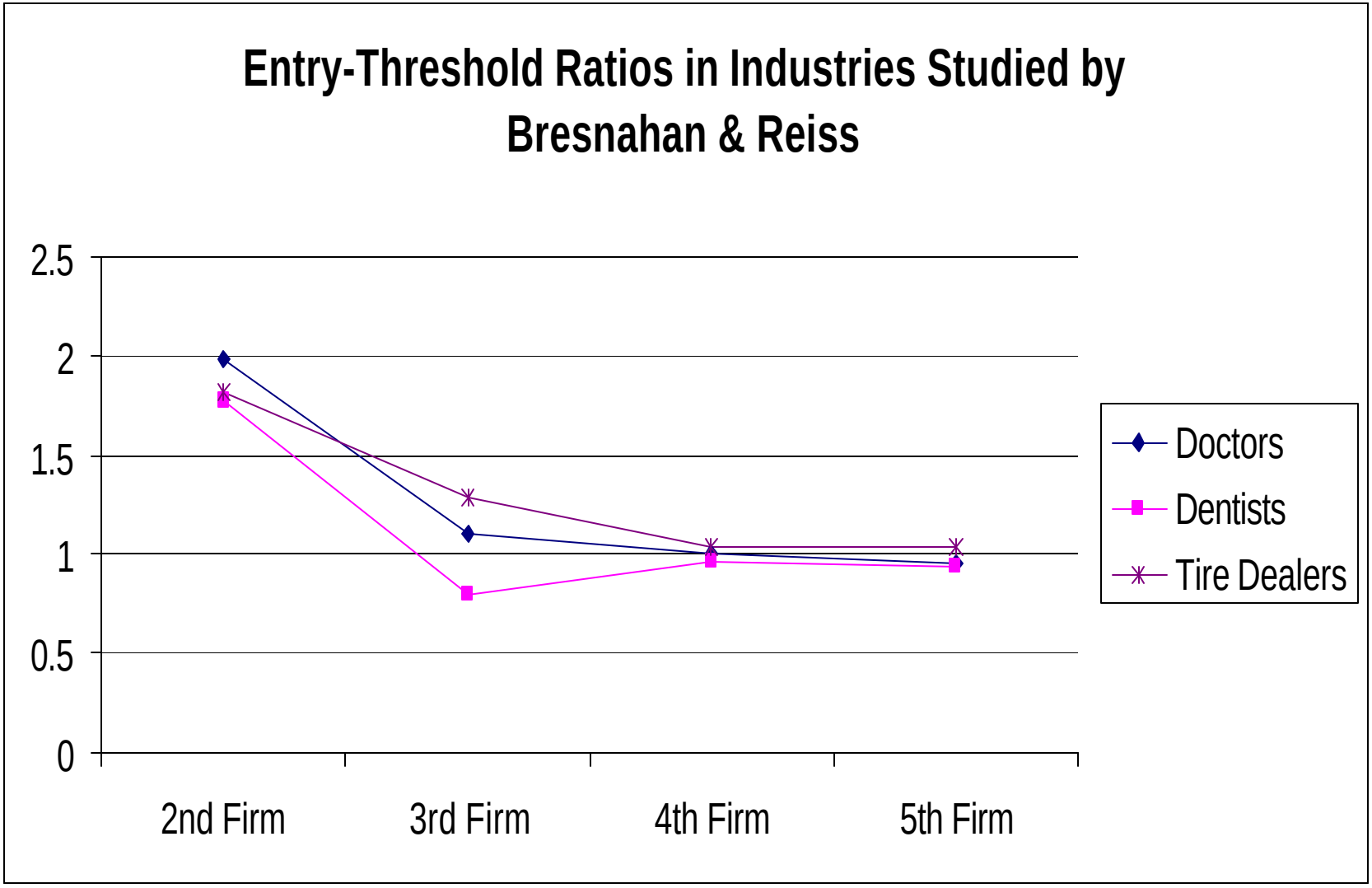
Insight: Firms will enter a market so long as:

Entry Costs < Profit Margin * Quantity

- N-Firm "Entry-Threshold Ratio":

$$\frac{\text{Market Size per Firm – N-firm markets}}{\text{Market Size per Firm – (N-1)-firm markets}}$$

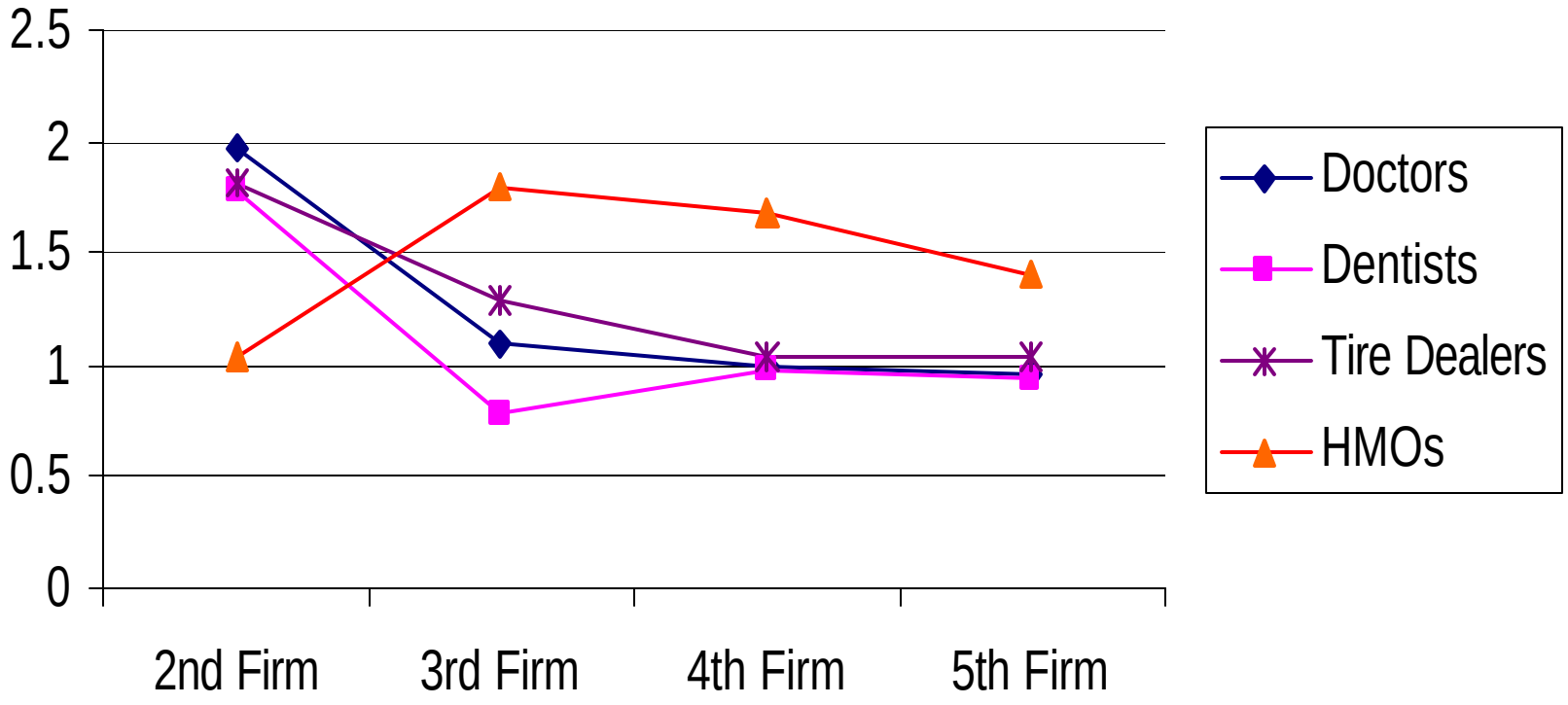
- $ETR_N > 1 \rightarrow$ the N^{th} firm's presence reduced margins
- $ETR_N = 1 \rightarrow$ the N^{th} firm's presence doesn't reduce margins


Entry-Threshold Ratios in Industries Studied by Bresnahan & Reiss
2.5
2
1.5
1
0.5
0
2nd Firm
3rd Firm
4th Firm
5th Firm
Doctors
Dentists
Tire Dealers

Total Number of HMOs per Market

Number of HMOs operating	Number of markets	Frequency (%)
0	5	1.9
1	10	3.8
2	31	11.8
3	42	16.0
4	37	14.1
5	28	10.6
6	33	12.5
7	19	7.2
8	20	7.6
9	12	4.6
10	13	4.9
11	5	1.9
12	4	1.5
13	2	0.8
14	1	0.4
15	4	0.4
Total	263	100.00

Comparing Entry Threshold Ratios for HMOs with the B & R Industries



Incorporating Product Heterogeneity

Dependent Variable = Product-Type Configuration at Each Market

(# of National HMOs, # of Local HMOs)

Underlying Economic Relationship:

$$p_{Tm} = X_m b_T - q_T N_T - q_{-T} N_{-T} + e_{Tm}$$

Market Effects

Competitive Effects

Key Parameters Estimate the Competitive Effects of Each Product-Type

Observed Product Type Configurations in the Dataset

Product-Type Configuration -- Number of Markets

	Local HMOs					
National HMOs	**0**	**1**	**2**	**3**	**4**	**5+**
0	5	7	1	8	1	1
1	3	24	16	7	6	4
2	6	17	15	3	6	5
3	1	9	13	5	4	6
4	5	5	9	7	4	4
5+	4	9	6	14	12	11

Estimated Parameters: Competitive Effects

Parameter		Estimate	Standard Error
Competitive Effects on Local HMOs			
Constant	C_L	1.79	0.13
Local Competitor #1	θ_{LL1}	-1.07	0.10
Local Competitor #2	θ_{LL2}	-0.68	0.07
Local Competitor #3 & #4	$\theta_{LL3/4}$	-0.57	0.05
# of National Competitors	θ_{LS}	-8.8e-8	2.7e-5
Competitive Effects on National HMOs			
Constant	C_S	2.04	0.14
National Competitor #1	θ_{SS1}	-1.05	0.11
National Competitor #2	θ_{SS2}	-0.61	0.06
National Competitor #3 & #4	$\theta_{SS3/4}$	-0.46	0.04
# of Local Competitors	θ_{SL}	-1.1e-7	3.3e-5

Estimated Parameters: Market Effects

Parameter		Estimate	Standard Error
Market Effects on Local HMOs			
Constant	C_L	1.79	0.13
Population	$\beta_{L\text{-}P}$	0.56	0.08
Per Capita Income	$\beta_{L\text{-}I}$	0.03	0.43
Older Resident Share	$\beta_{L\text{-}O}$	-0.13	0.22
Large Establishment Share	$\beta_{L\text{-}BE}$	0.66	0.12
State Regulations	$\beta_{L\text{-}R}$	-0.14	0.08
Extra Hospitals	$\beta_{L\text{-}EH}$	0.12	0.04
Market Effects on National HMOs			
Constant	C_S	2.04	0.14
Population	$\beta_{S\text{-}P}$	0.81	0.09
Per Capita Income	$\beta_{S\text{-}I}$	-1.62	0.44
Older Resident Share	$\beta_{S\text{-}O}$	1.14	0.24
Large Establishment Share	$\beta_{S\text{-}BE}$	-0.05	0.12
State Regulations	$\beta_{S\text{-}R}$	-0.22	0.08
Extra Hospitals	$\beta_{S\text{-}EH}$	0.02	0.05

Implications for Competition Policy in HMO Markets

- Estimated Parameters suggest that Within-Type Competition is Much Stronger than Across-Type Competition.

- Product types of merging HMOs are important to analyzing the potential competitive effects that will result:

Consider a (2,3) market ? (2,2) results if two locals merge
(1,3) results if two nationals merge

- Depending on market structure, a takeover may increase competition:

Consider a (3,1) market ? (2,2) results if national takes over a local

- Market Characteristics have a Differential Effect on National and Local HMOs ? Detailed Analysis Required in Individual Markets