Module 3: Hospital Pricing and Competition

Part 3: Understanding Competition

Ian McCarthy | Emory University
Econ 372

Central Empirical Issues

At least 2 related issues in studying hospital competitiveness:

1. How do we measure "competitiveness"?
2. What is the effect of competition?

Measuring competitiveness

- Common measure is Herfindahl-Hirschman Index (HHI), $\sum_{i=1}^{N} s_i^2$.
  - 2,500 is considered **highly concentrated**
  - 1,800 is considered **unconcentrated**
- "Willingness to pay" is more recent measure (theoretically supported)
- Both require a measure of the geographic market

Defining the market

Lots of subjectivity...

- Radius around a hospital?
- Concentric circles to define "catchment" areas?
- Patient/physician referrals?
- At what product-level do hospitals compete?

Trends in competitiveness

Almost any way you define it, hospital markets are more and more concentrated (less competitive) in recent decades.

- 1990: 65% of MSAs highlgy concentrated, 23% unconcentrated
- 2006: 77% highly concentrated, 11% unconcentrated

Hospital concentration over time
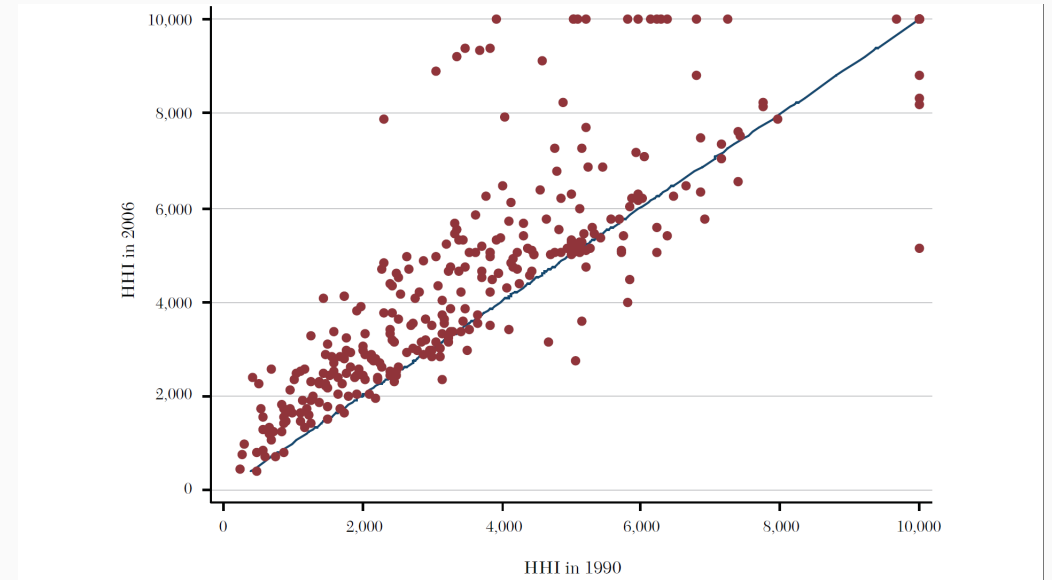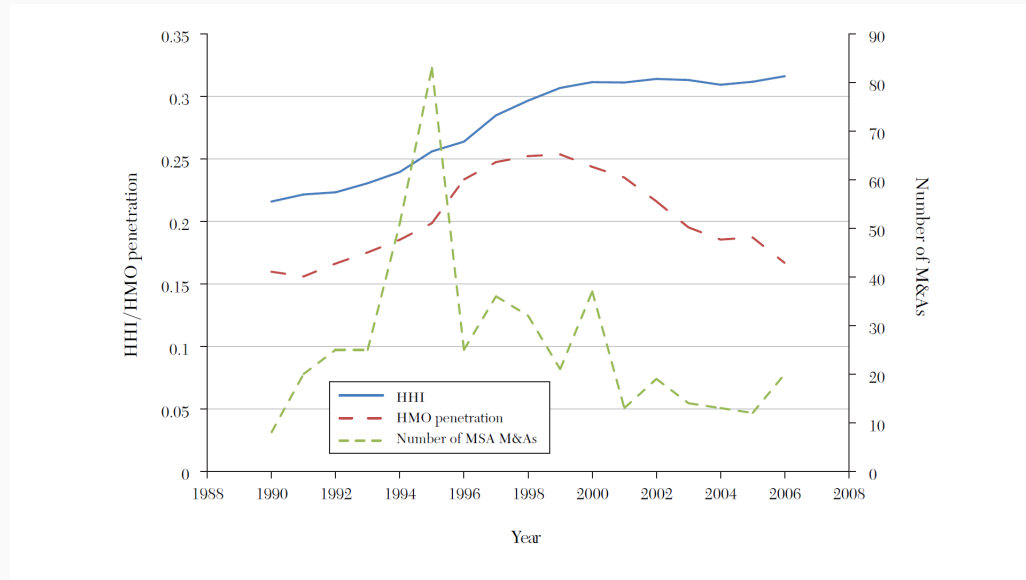
Source: Gaynor, Ho, and Town (2015). The Industrial Organization of Health Care Markets. Journal of Economic Literature.

Hospital concentration over time

- More data and interactive report from the Health Care Cost Institute.
- Presentation from the National Institute for Health Care Management

Why?

Historical perception of hospital competition as "wasteful" and assumption that more capacity means more (unnecessary) care:

- Limit public spending by limiting competition
- Prevalence of certificate of need (CON) laws

Effects of reduced competition

1. Higher prices
2. Lower quality, 2020 NEJM Paper
3. Maybe lower costs (but not passed on to lower prices)

Effects for both "in-market" and "out-of-market" mergers

Modeling competition and prices

Health care providers compete on both quality and price (possibly other dimensions such as access or wait times). This complicates our theoretical analysis of competition.

Competition with fixed prices

- Demand: $q_j = s_j(z_j) \times D(\bar{p})$
- Costs: $c_j = c(q_j, z_j) + F$
- Profits: $\pi_j = \bar{p}q_j - c_j$

Hospitals choose quality such that:

$$\frac{d\pi_j}{dz_j} = \left(\bar{p} - \frac{dc_j}{dq_j}\right)\left(\frac{ds_j}{dz_j}D + s_j\frac{dD}{dz_j}\right) - \frac{dc_j}{dz_j} = 0$$

Competition with fixed prices

- Increase in competition will tend to increase quality
- Negative welfare effects if $\frac{dD}{dz_j}$ is sufficiently small and fixed costs are large

Competition with market prices

Profit given by $\pi = q(p, z) \times (p - c - d \times z) - F$, which yields

$$p = \frac{\epsilon_p}{\epsilon_p - 1}(c + dz)$$

$$z = \frac{\epsilon_z}{\epsilon_z + 1}\frac{p - c}{d}$$

Competition with market prices

Rewrite in terms of elasticities:

$$\epsilon_p = \frac{p}{p - c - dz}$$

$$\epsilon_z = \frac{dz}{p - c - dz}$$

Taking the ratio and solving for z yields,

$$z = \frac{p}{d} \times \frac{\epsilon_z}{\epsilon_p},$$

Competition with market prices

Dorfman-Steiner condition:

- Quality increases if the quality elasticity increases or if price increases
- Quality increases if the price elasticity decreases or the marginal cost of quality decreases
- **Prediction for competition:** If competition has a large effect in terms of price elasticity (i.e., consumers are heavily responsive to the price effects from increased competition), then quality may decrease. If instead competition has a large effect in terms of quality elasticity (i.e., consumers are more responsive to quality changes), then quality will increase.