Is Hospital Competition Socially Wasteful?

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Research Question

- Does competition increase or decrease social welfare?
- Theory is ambiguous
  - Low price sensitivity leads to Medical Arms Race (MAR) -> decrease welfare
  - Payers can negotiate lower prices when competition is high -> increase welfare

Previous Empirical Limitations

- 1. Looked at wrong dependent variables (e.g. list price vs. discounted price)
- 2. Construction of "market competitiveness measure" is inherently biased
  - The "variable radius method" (radius that covers 75% patients served by a hospital)
  - HHI = Sum of squared "share of patient flows"
  - Spending = HHI (patient flow depends on quality) + unobserved hospital quality (OV bias)
- 3. Not enough control variables (e.g. hospital characteristics)

Models (Step 1)

- Predict probabilities of admission for every patient
  - Typical discrete choice estimation
  - Z: hospital characteristics (such as teaching vs. non-teaching)
  - D^+: Distance between current hospital vs. closest good substitute
  - D^-: Distance between current hospital vs. closest poor substitute

$$Y^*_{ij} = V(D^{1+}_{ij}, \ldots, D^{H+}_{ij}, D^{1-}_{ij}, \ldots, D^{H-}_{ij}; Z^1_j, \ldots, Z^H_j) + W(X_i; Z^1_j, \ldots, Z^H_j) + \epsilon_{ij},$$

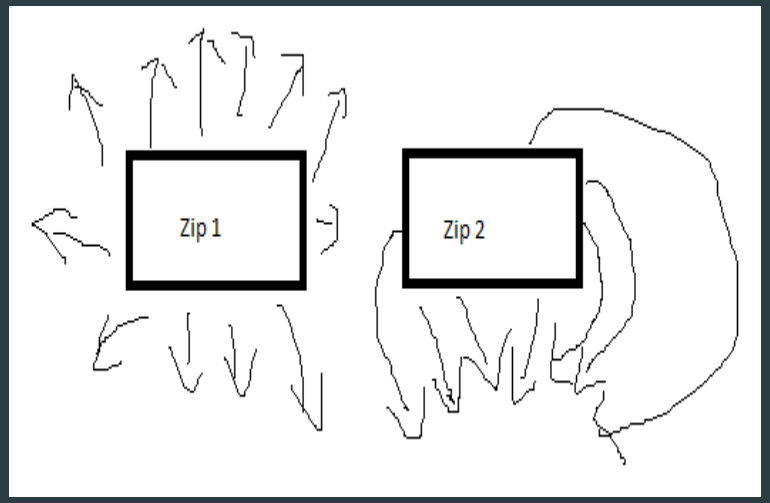
- Then, predict the number of patients admitted to each hospital

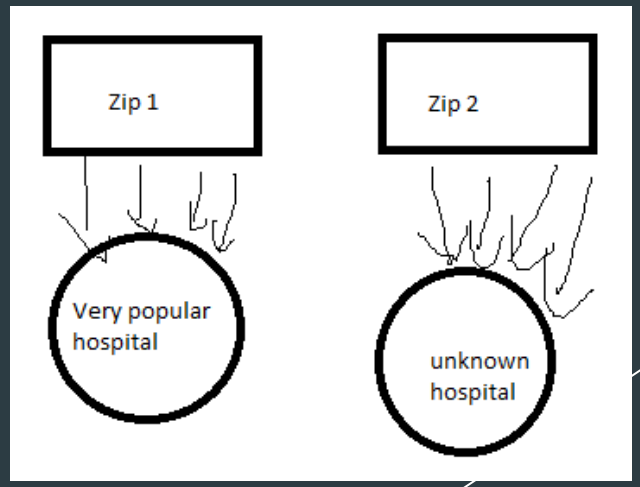
Models (Step 2)

- Construct measure of "market concentration"
  - $HHI_k^{pat} = \sum_{j=1}^{J} \widehat{\alpha_{jk}}^2$
    - $\widehat{\alpha_{jk}}$ = share of patients from zip k going to hospital j
  - $HHI_j^{hosp} = \sum_{k=1}^{K} \widehat{\beta_{kj}} * HHI_k^{pat}$.
    - $\widehat{\beta_{kj}}$ = share of people going to j who are from k
  - $HHI_k^{pat*} = \sum_{j=1}^{J} \widehat{\alpha_{jk}} * HHI_j^{hosp}$

Models (Step 2 - continued)

- Why go through this ordeal?
  - Two levels of market concentration: patient level and hospital level
  - We can't use HHI_k^{pat} directly because it doesn't account for hospital level concentration
  - We can't use HHI_j^{hosp} due to omitted variable bias (previously discussed)
- Patient-level concentration vs. Hospital-level concentration





Models (Step 3)

- Regress health expenditures on market concentration

$$\begin{aligned}\ln(R_{ikt}) = {} & \delta_k + \sigma_t M_k + U_{ikt}\phi \\ & + HHI_{kt}^{pat^*} * I(1985 \vee 1988)\eta_{1980s} \\ & + HHI_{kt}^{pat^*} * I(1991 \vee 1994)\eta_{1990s} \\ & + OMC_{kt} * I(1985 \vee 1988)\psi_{1980s} \\ & + OMC_{kt} * I(1991 \vee 1994)\psi_{1990s} + \xi_{ikt},\end{aligned}$$

Data / Setting

- Longitudinal Medicare claims data
  - AMI patients only
- U. S. hospital characteristics collected by the American Hospital Association
- Patient HMO enrollment data from InterStudy Publications

Results

- Before 1991
  - Less competition -> less cost + higher rates of mortality
  - Overall impact on social welfare is unclear
- After 1991
  - Less competition -> higher cost + higher rates of mortality
    - Cost if 8.4% higher if market concentration move from first to third quartile
  - Overall impact is clear (higher competition -> better welfare)
- Higher Managed Care Enrollments -> lower cost + no negative impact on health

Conclusion

- Using traditional HHI in analysis can generate biased results
- Note the time varying effect of competition on welfare
- Discussions:
  - 1. Why do you think people still use HHI?
  - 2. Do you think not-for-profit hospitals care about competition?

Journal of Antitrust Enforcement, 2022, 10, 248–259
https://doi.org/10.1093/jaenfo/jnac009
Advance Access Publication Date: 28 May 2022
Article

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On the misuse of regressions of price on the HHI in merger review

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