

The Effect of Competition on Quality and Cost in Pennsylvania Health Care

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Economics

Research Question

- How does report card online publication affect the impact of hospital competition on quality of care?

Conventional Wisdom

- Competition leads to lower prices and higher consumer welfare
- Why is health market special?
 - Differentiated products
 - Imperfect information
 - Moral hazard
 - Agency problems
 - Government regulation
 - Prevalence of nonprofit hospitals

Hospital Competition – Theoretical Models

- If prices are set by firms (i.e. HMO)
 - the effect of competition on quality is ambiguous
- If prices are regulated (i.e. Medicare or MAR)
 - competition leads to better quality and consumer welfare

Impacts of Quality Report Card

- The online publication of quality report card (1998)
 - Increases the quality elasticity of demand
 - Quality is improved after the publication of report card
 - The quality elasticity of demand increases more in a more competitive market
 - Quality is improved more in a more competitive market

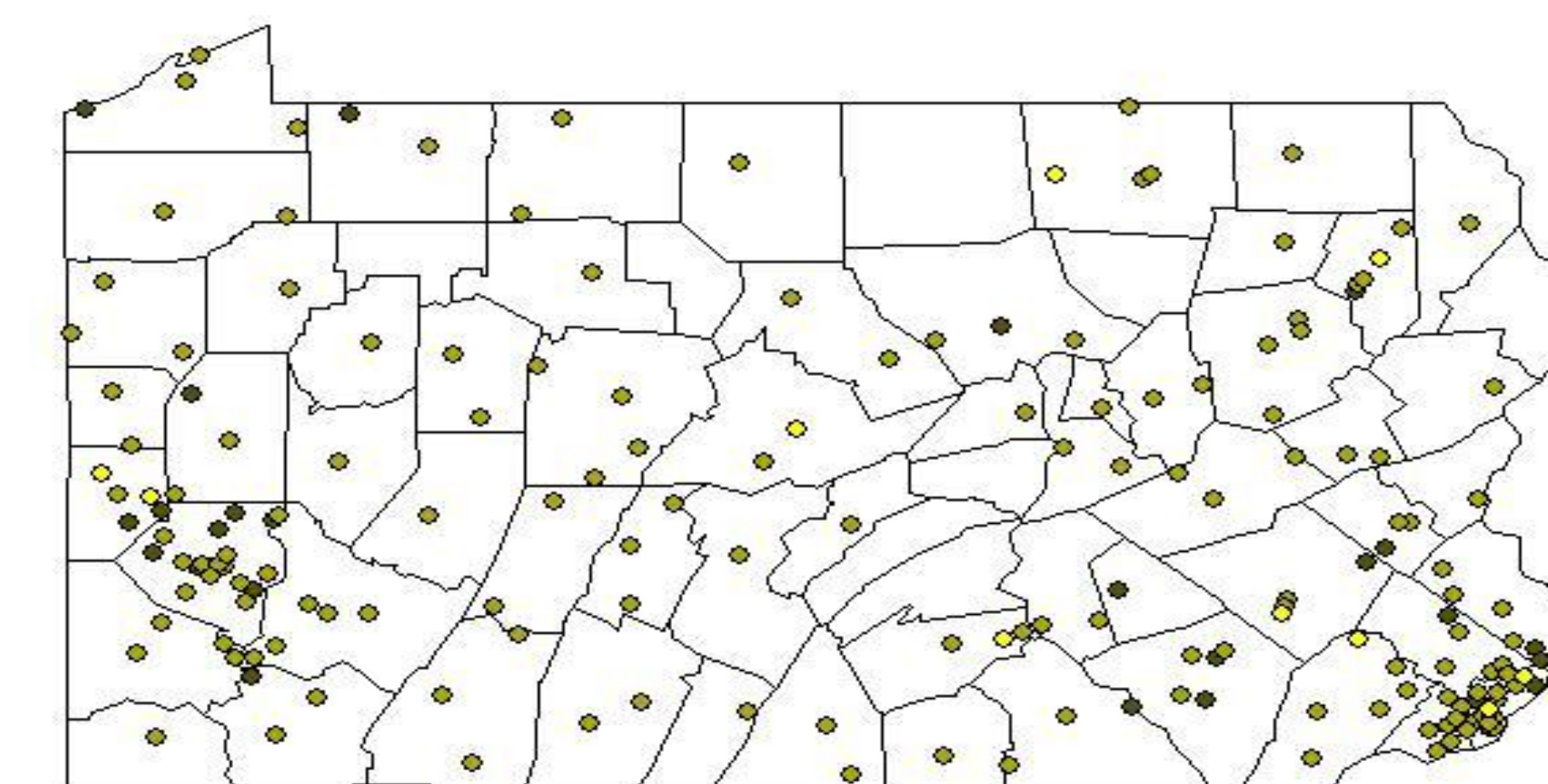
Theoretical Implication

- Quality, in terms of input measures, should be improved more in a more competitive market after report card online publication.
- Quality, in terms of health outcomes, may or may not be improved. The prediction is complicated by the possibility of medical arms race (MAR).

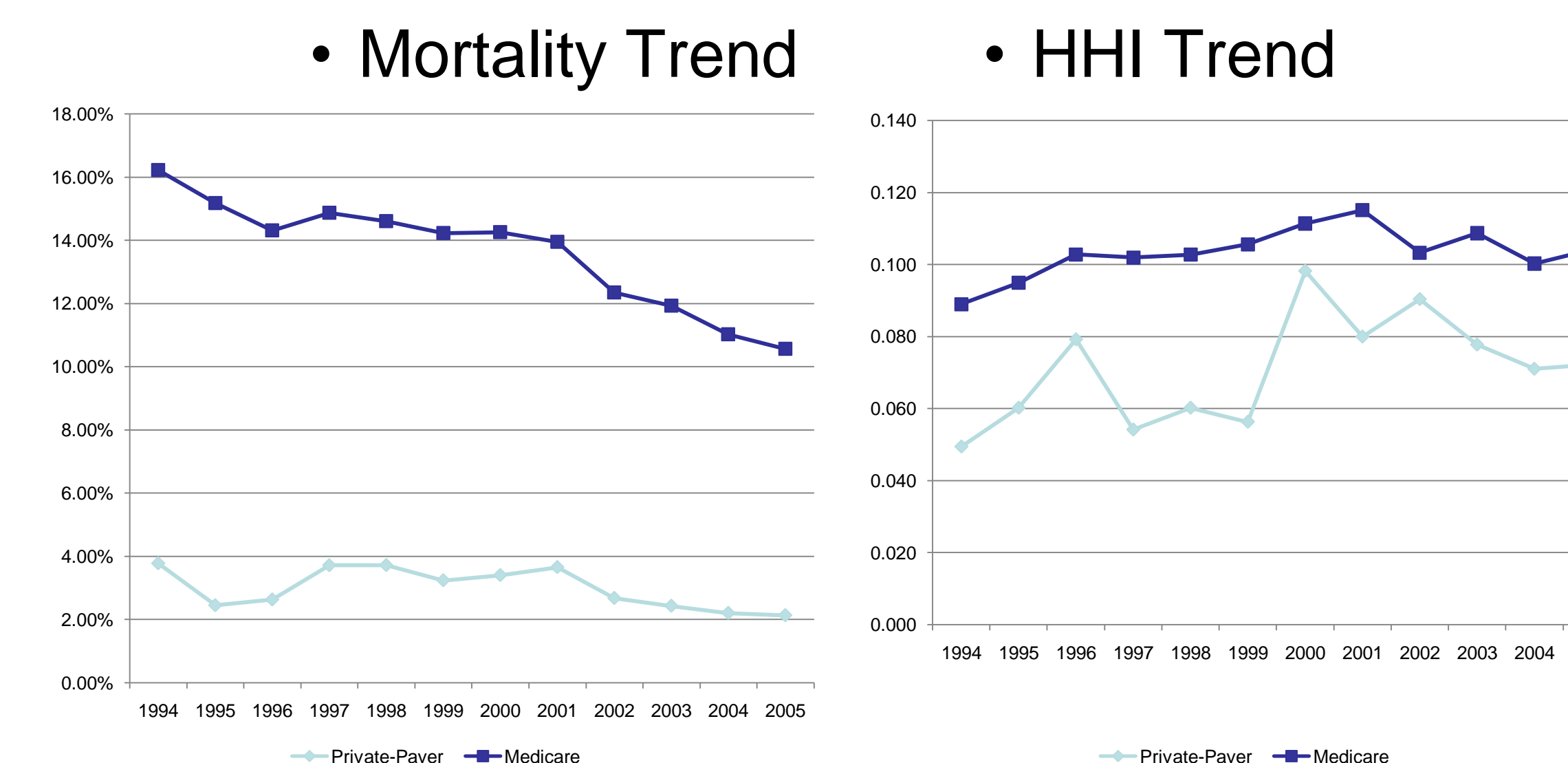
Medical Arms Race (MAR) – Quality Competition

- Hospitals compete by providing too many high-tech medical services in order to attract physicians [Robinson and Luft 1985; 1987]
 - Duplication of capital-intensive services raises the costs of care.
 - Failure of taking advantage of scale and learning effects cause the quality of care to fall.

Map of PA AMI-Serving Hospitals



Descriptive Statistics



Herfindahl-Hirschman Index Calculation

$$\hat{\alpha}_{jk} = \frac{\sum_i \hat{\pi}_{ij}}{\sum_{j=1}^J \sum_i \hat{\pi}_{ij}}$$

$$HHI_k^{pat} = \sum_{j=1}^J \hat{\alpha}_{jk}^2$$

$$HHI_j^{hosp} = \sum_{k=1}^K \beta_{kj} HHI_k^{pat}$$

$$\beta_{kj} = \frac{\sum_i \hat{\pi}_{ij}}{\sum_{i=1}^N \hat{\pi}_{ij}}$$

$$HHI_k^{pat*} = \sum_{j=1}^J \hat{\alpha}_{jk} HHI_j^{hosp}$$

where k denotes the Pennsylvania zip code of patient residence, j denotes each hospital admitting AMI patients, and $\hat{\pi}_{ij}$ equals the predicted probability of hospital choice.

Regression Results

Variable	Private-Payer			Medicare		
	Mortality	CABG	Expenditure	Mortality	CABG	Expenditure
HHI Low	-0.012 [-1.42]	-0.014 [-0.84]	0.008 [0.18]	-0.006 [-0.57]	-0.005 [-0.52]	0.015 [0.47]
HHI Mid	-0.007 [-1.20]	-0.002 [-0.20]	-0.012 [-0.41]	0.000 [0.014]	-0.003 [-0.50]	-0.001 [-0.063]
HHI Low Online	0.011 [1.51]	0.020 [1.43]	0.204*** [4.44]	0.019*** [2.96]	0.020*** [2.92]	0.135*** [5.41]
HHI Mid Online	0.005 [0.85]	0.013 [0.99]	0.055 [1.30]	0.003 [0.58]	0.001 [0.20]	0.016 [0.79]
Online	0.010 [1.03]	-0.020 [-1.06]	-4.512*** [-110]	-0.032*** [-4.45]	0.004 [0.61]	-4.440*** [-214]

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
Standard errors are given in brackets

Interpretation of Results

- Higher levels of competition lead to increases in technology and capital investment
- This results in a MAR, which spread patients out across many hospitals
 - Prevents hospitals from “learning-by-doing”
 - Hinders quality as measured by mortality rates