Explaining Hospital Prices and Profits : Medicare Cost Shifting or Market Concentration?

James C. Robinson

Kaiser Permanente Professor of Health Economics
Director, Berkeley Center for Health Technology

University of California, Berkeley

OVERVIEW

- 2 competing theories of hospital prices and profits
  - Medicare cost shifting
  - MedPAC: medical arms race
- Data and methods
- Results
  - Hospital costs per patient admission
  - Commercial revenues per patient admission (prices)
  - Commercial contribution margins
  - Medicare contribution margins
- Implications for theories of prices and profits

The facts to be explained

- Hospital costs: high and rising
- Hospital market concentration: high and rising
- Payment rates to hospitals
  - Commercial: high and rising
  - Medicare: low(er) and rising (less) rapidly
- Profits (contribution margins) for hospitals
  - Commercial: positive
  - Medicare: negative
- What explains this pattern?

Model One: Medicare cost shifting

- The theory:
  - Medicare underpays hospitals relative to true costs incurred by hospitals for Medicare patients
  - Hospitals therefore increase prices to commercially insured patients
- Implicit assumption: hospitals have latent bargaining leverage with commercial insurers that they bring into play when needed
  - Hospital costs are not determined by market structure
- Implication: Medicare underpays hospitals (negative margins) and is at fault for high prices charged to commercial plans ('cost shifting')

Model Two: MedPAC (medical arms race)

- The theory (Stensland et al, Health Affairs May 2010):
  - Hospitals in concentrated local markets increase prices to commercial insurers because they can
    - They cannot increase prices to Medicare
  - These higher revenues permit hospitals to put less effort into cost control (allow the medical arms race)
  - Medicare revenues fall below these higher costs and hence Medicare margins are low or negative
- Implicit assumption: hospital costs respond to market structure, are not exogenous
- Implication: Hospital market concentration, not Medicare cost shifting, drive commercial prices, which drives costs and Medicare margin losses

Tests to distinguish the models

- Concentration and **commercial prices**
  - MedPAC and cost shift models both predict positive association (but with different views on causality)
- Concentration and **commercial margins**
  - MedPAC: weak positive association (commercial revenues dissipated to cover higher costs)
  - Cost shift: strong positive association (hospital uses commercial margins to subsidize care for Medicare)
- Concentration and **costs**
  - MedPAC: positive association (arms race)
  - Cost shift: no association (costs exogenous)
- Concentration and **Medicare margins**
  - MedPAC: negative association (higher costs due to higher commercial prices and revenues; hence lower Medicare margin)
  - Cost shift: no association (costs, Medicare revenues exogenous)

Data

- Patient records from 61 hospitals in 8 states (2008)
  - Angioplasty with stent (n=4474)
  - Cardiac valve replacement (n=1731)
  - Pacemaker insertion (n=3156)
  - Defibrillator (ICD) insertion (n=1187)
- Outcome variables: costs per admission, commercial payments, commercial margins, Medicare margins
- Patient level data: demographics, diagnoses, co-morbidities, complications, discharge destination
- Hospital level data: surgical volumes, teaching status, bed size, wage levels
- Market level data: HHI of concentration for Hospital Referral Regions (from Dartmouth Atlas patient flow data)

Average Price (Payment) Per Patient Admission

	Angioplasty with Stent	Valve Replacement	Pacemaker Insertion	Defibrillator Insertion
Commercially Insured	$25,109	$72,262	$23,354	$52,824
Medicare Insured	$15,444	$50,245	$16,548	$37,276
"Cost Shift" Controlling for Patient, Hospital, and Market Characteristics	$9,943	$24,895	$5,870	$14,509
R^2	0.26	0.33	0.28	0.27

Bivariate Correlations between Hospital Cost Per Patient and Other Hospital Characteristics

	Angioplasty with Stent	Valve Replacement	Pacemaker Insertion	Defibrillator Insertion
Market Concentration	++	+++	+++	+++
Commercial Revenue /Admission	+++	+++	+++	+++
Commercial Margin	+++	+++	+++	+++
Medicare Margin	- - -	- - -	- - -	- - -
N	4,474	1,731	3,156	1,187

+: p-value < 0.1
++: p-value < 0.05
+++: p-value < 0.01

Multivariate Determinants of Hospital Costs per Patient Admission (all patients)

	Angioplasty with Stent	Valve Replacement	Pacemaker Insertion	Defibrillator Insertion
Market Concentration	NS	+++	+++	++
R^2	0.31	0.67	0.47	0.40

Multivariate Determinants of Hospital Prices (Payment) per Commercial Patient Admission

	Angioplasty with Stent	Valve Replace	Pacemaker Insertion	Defibrillator Insertion
Market Concentration	++	NS	+++	+
R^2	0.24	0.25	0.32	0.27

Multivariate Determinants of Hospital Profit (Contribution Margin) on Commercial Patients

	Angioplasty with Stent	Valve Replacement	Pacemaker Insertion	Defibrillator Insertion
Market Concentration	++	NS	+++	NS
R^2	0.17	0.16	0.20	0.18

Multivariate Determinants of Hospital Profit (Contribution Margin) on Medicare Patients

	Angioplasty with Stent	Valve Replacement	Pacemaker Insertion	Defibrillator Insertion
Market Concentration	NS	- - -	- - -	- - -
R^2	0.28	0.28	0.20	0.27

Implications for Theories of Hospital Prices

- Hospitals in consolidated markets exhibit:
  - Higher costs (medical arms race)
  - Higher prices for commercial insurers (leverage)
  - Higher profits (margins) from commercial insurers
  - Lower profits (margins) from Medicare
- MedPAC model receives strong support
  - Hospitals in concentrated markets charge higher commercial prices, which facilitates cost growth, which leads to negative Medicare margins
- Cost shift model receives only weak support
  - Cannot explain strong role of local market structure on hospital pricing, costs, margins