



# Module 3: Hospital Pricing and Competition

## Part 2: Bargaining

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Econ 372

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What is a hospital's *price*?

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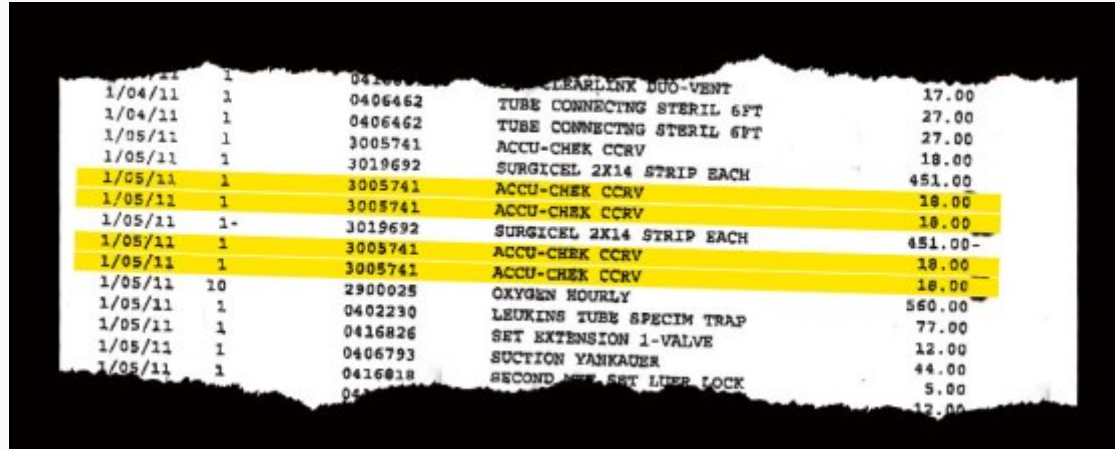
# What is a hospital price?

In practice, it's a negotiation with insurers

- Hospitals can't set price on their own
- Negotiation with insurers
- Bargaining problem where insurer and hospital split some total amount
- Agent/entity with higher bargaining position will get larger share

# What is a hospital price?

Defining characteristic of hospital prices and services: *it's complicated!*



1/04/11	1	041000	CLEARLINK DUO-VENT	17.00
1/04/11	1	0406462	TUBE CONNECTING STERIL 6FT	27.00
1/04/11	1	0406462	TUBE CONNECTING STERIL 6FT	27.00
1/05/11	1	3005741	ACCU-CHEK CCRV	18.00
1/05/11	1	3019692	SURGICEL 2X14 STRIP EACH	18.00
1/05/11	1	3005741	ACCU-CHEK CCRV	451.00
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1/05/11	1	3005741	ACCU-CHEK CCRV	18.00
1/05/11	10	2900025	OXYGEN HOURLY	18.00
1/05/11	1	0402230	LEUKINS TUBE SPECIM TRAP	560.00
1/05/11	1	0416826	SET EXTENSION 1-VALVE	77.00
1/05/11	1	0406793	SUCTION YANKAER	12.00
1/05/11	1	0416818	SECOND SET LUER LOCK	44.00
		0416818		5.00
		0416818		12.00

Brill, Steven. 2013. "Bitter Pill: Why Medical Bills are Killing Us." \*Time Magazine\*.

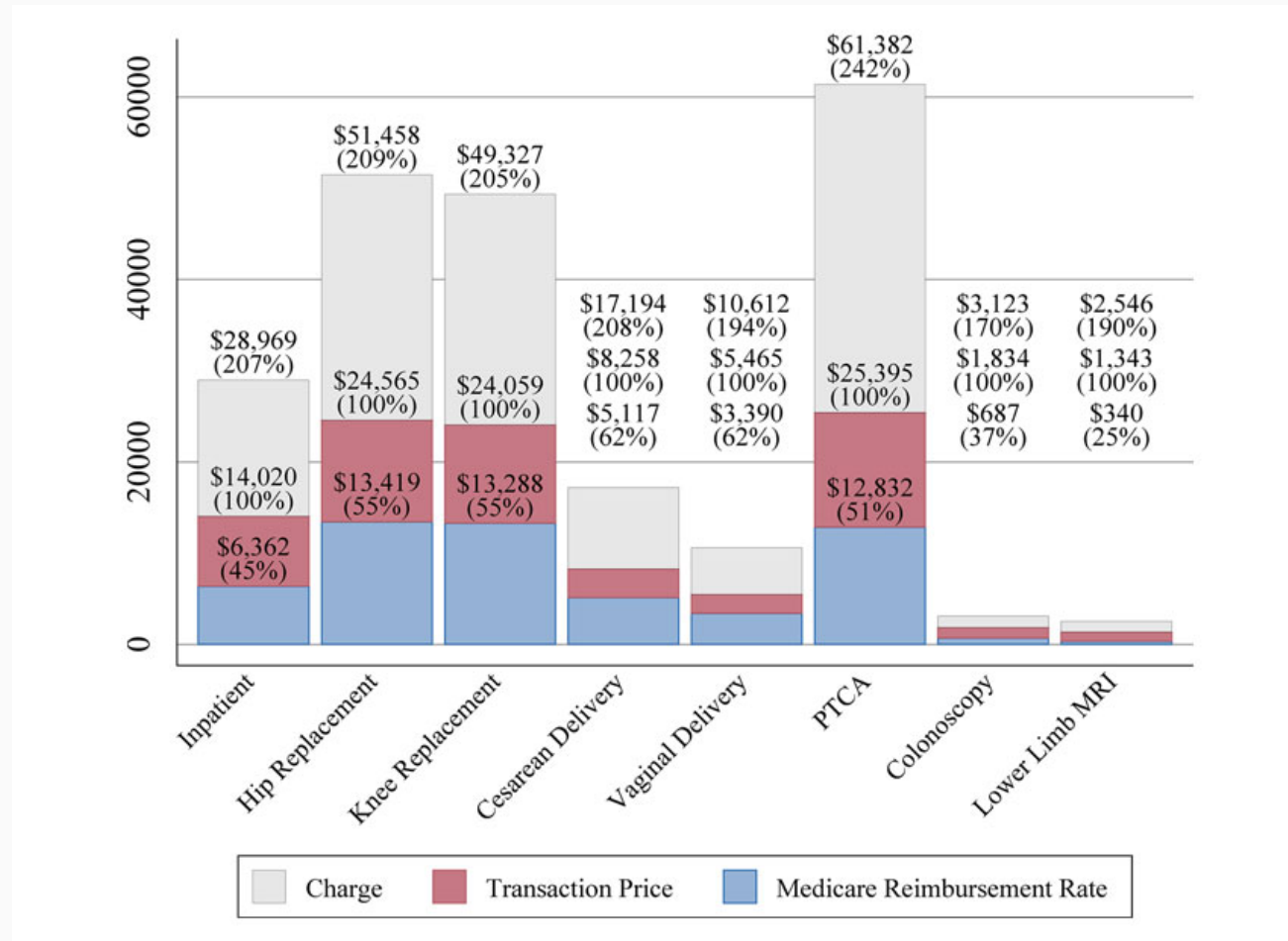
# What is a hospital price?

Lots of different payers paying lots of different prices:

- Medicare fee-for-service prices
- Medicaid payments
- Private insurance negotiations (including Medicare Advantage)
- But what about the price to patients?

Price  $\neq$  charge  $\neq$  cost  $\neq$  patient out-of-pocket spending

# What is a hospital price?



Source: Health Care Pricing Project

# What is a hospital price?

Not clear what exactly is negotiated...

## Fee-for-service

- price per procedure
- percentage of charges
- markup over Medicare rates

## Capitation

- payment per patient
- pay-for-performance
- shared savings



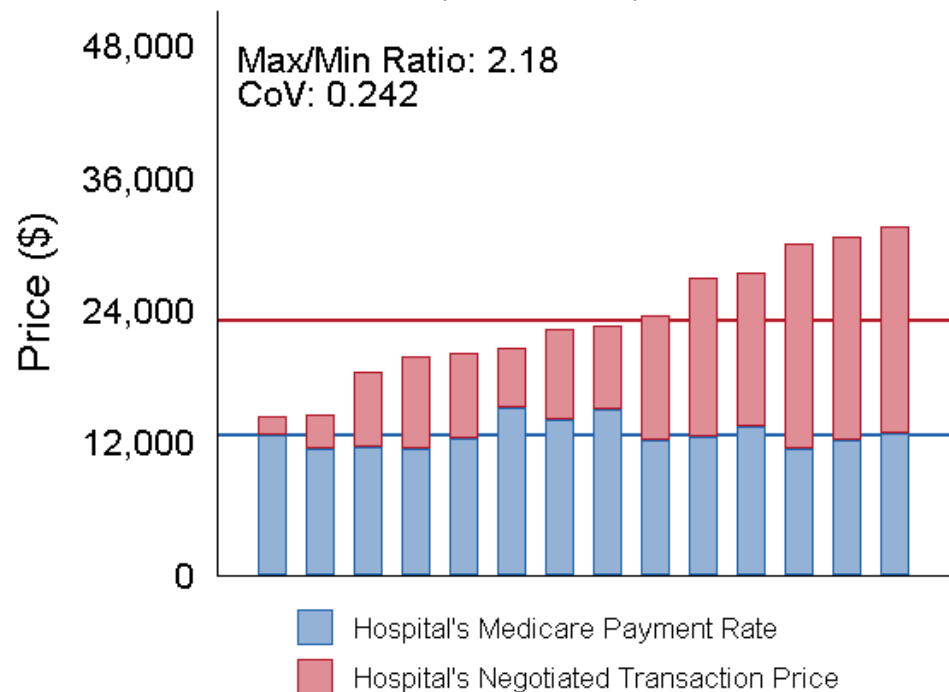
# Hospital prices in real life

We'll get into the real data in a bit, but for now...a few facts:

1. Hospital services are expensive
2. Prices vary dramatically across different areas
3. Lack of competition is a major reason for high prices

# Hospital prices in real life

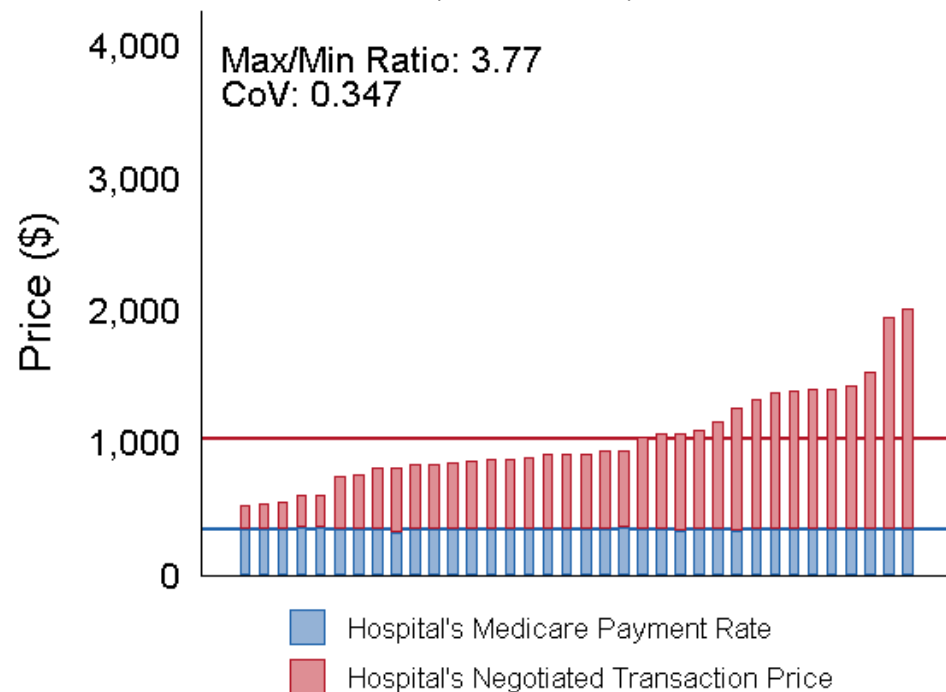
## Hospital Prices for Hip Replacement Atlanta, GA HRR, 2008-2011



**Note:** Each column captures a hospital's negotiated transaction price and Medicare reimbursement. Prices are averaged from 2008-2011 and presented in 2011 dollars. CoV captures the coefficient of variation of hospital negotiated transaction prices within the HRR. Max/Min captures the max/min ratio of hospital's negotiated transaction prices within the HRR. Horizontal lines indicate average rates and prices within the region.

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## Hospital Prices for Lower Limb MRI Atlanta, GA HRR, 2008-2011



**Note:** Each column captures a hospital's negotiated transaction price and Medicare reimbursement. Prices are averaged from 2008-2011 and presented in 2011 dollars. CoV captures the coefficient of variation of hospital negotiated transaction prices within the HRR. Max/Min captures the max/min ratio of hospital's negotiated transaction prices within the HRR. Horizontal lines indicate average rates and prices within the region.

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# Pricing and Negotiations

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# Nash Bargaining problem

We model this bargaining problem as a "Nash bargaining" problem.

- Two people are faced with a negotiation
- If they agree, each gets payoffs  $u_1$   $u_2$ , respectively
- If they disagree, each gets some other payoff,  $t_1$  and  $t_2$ , with  $u_1 > t_1$  and  $u_2 > t_2$
- Nash showed that the solution is  $\max(u_1 - t_1)(u_2 - t_2)$

# Understanding the outside option

Key part of understanding effect on price is to understand the "outside option".

What does this mean?

Outside option in this case is the profit to the hospital or insurer if a negotiation "breaks down". What is the outside option to an insurer if they are in a monopoly hospital market?

# In-class problem (Nash bargaining)

Assume that two agents are negotiating over how best to divide their quantity of good  $x$ , which is normalized to 1. If the players reach an agreement, player 1 receives utility  $u_1 = x$ , and player 2 receives utility  $u_2 = (1 - x)$ . If the players do not reach an agreement, player 1 receives a payoff of  $t_1 = 0$ , and player 2 receives payoff  $t_2 = a > 0$ .

1. Find the Nash bargaining solution to this game.
2. Explain how this solution varies with  $a$ .