

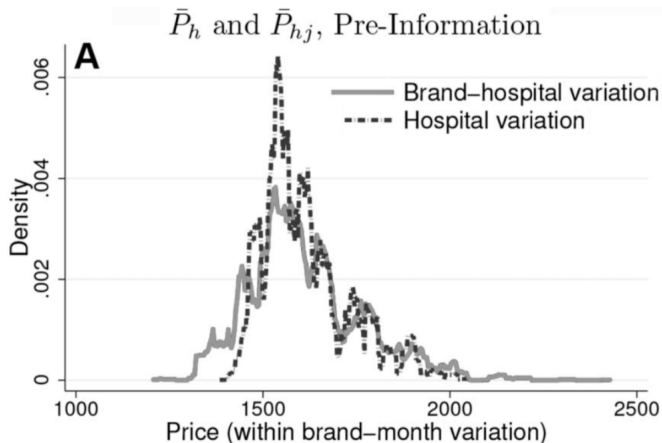
Transparency and Negotiated Prices: The Value of Information in Hospital-Supplier Bargaining

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Presented by: Linh Phan

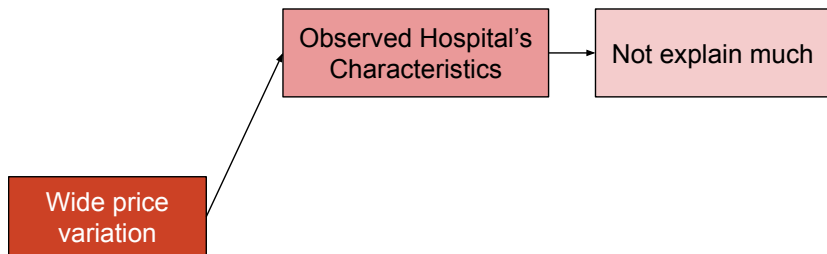
1. Motivation
2. Research Questions
3. Preview of findings
4. Data
5. Econometrics and Identification
6. Results
7. Threats
8. Contributions

Motivations

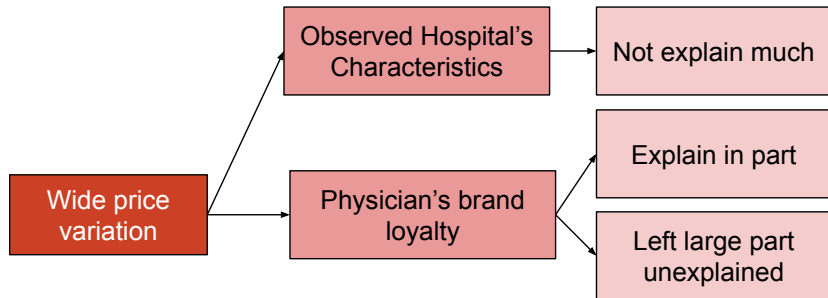


- ▶ Substantial variation in prices of hospital supplies
- ▶ High prices on hospital supplies → High health care cost

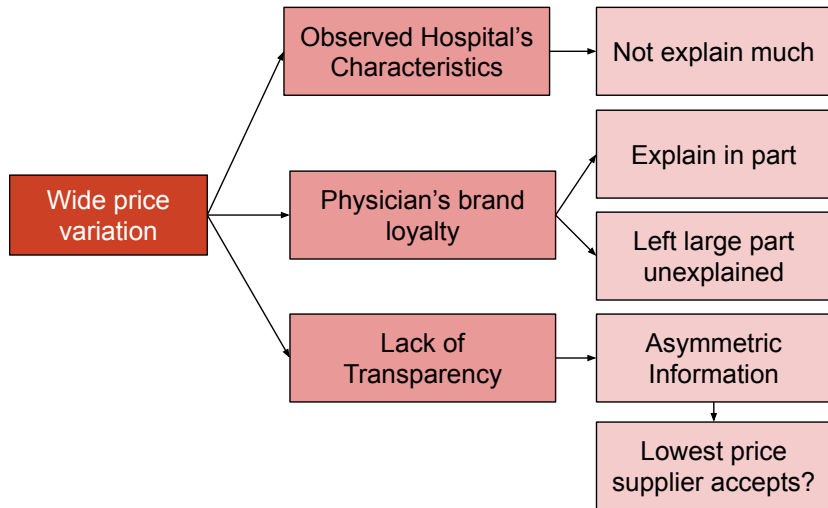
Motivations - What cause the variation?



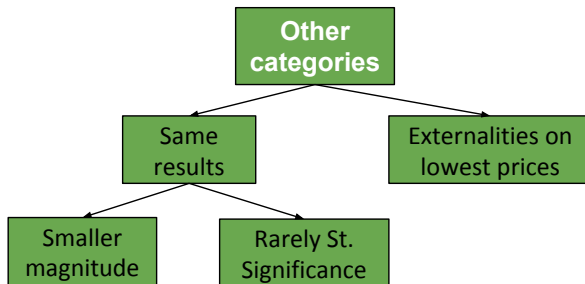
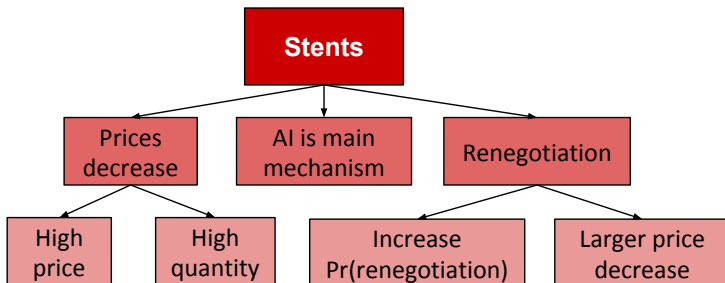
Motivations- What cause the variation?



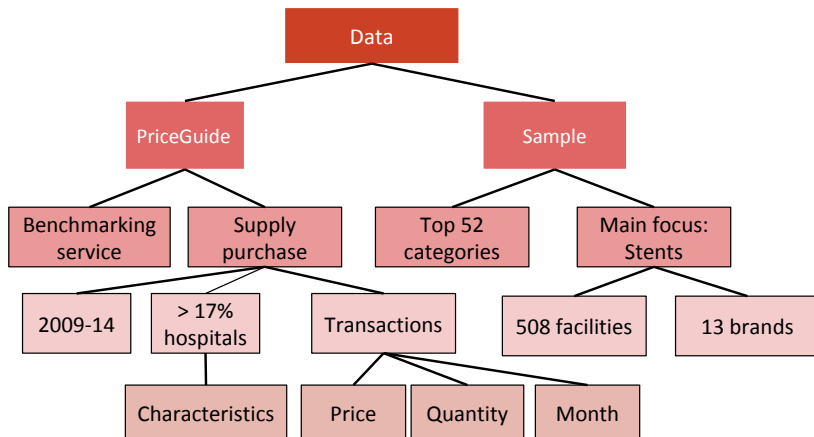
Motivations- What cause the variation?



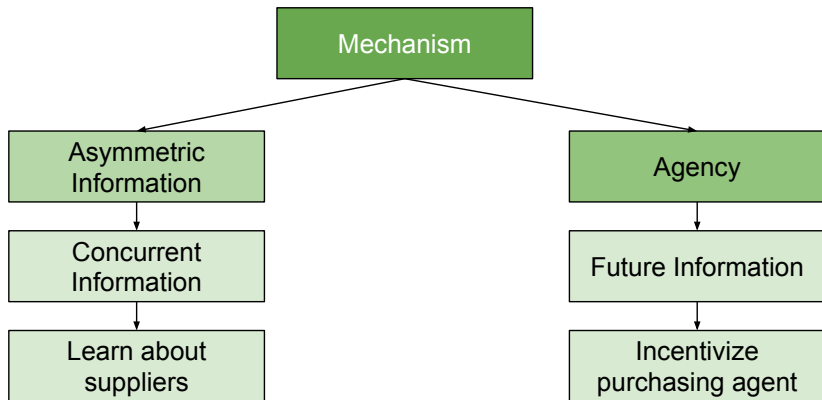
Preview of findings



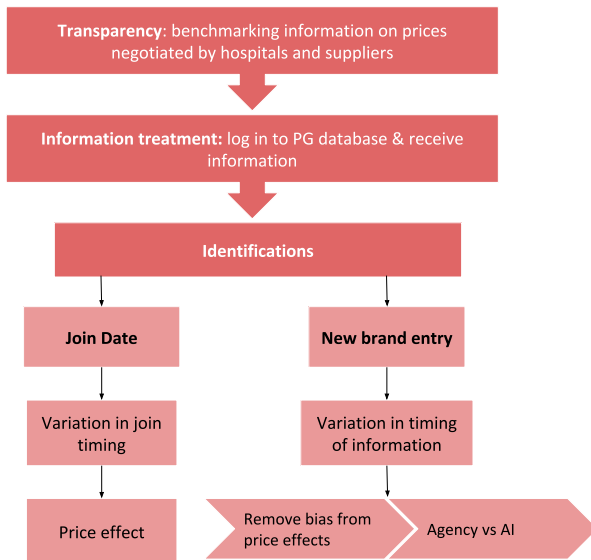
Data



Theoretical highlight

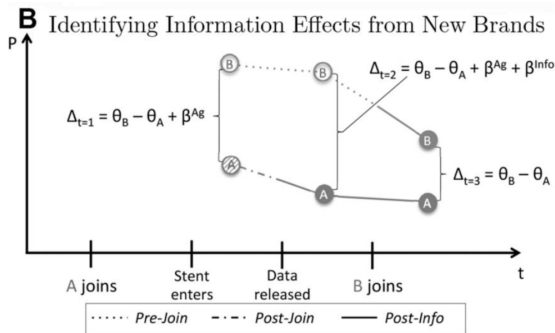


Identification of Information Treatment Effects

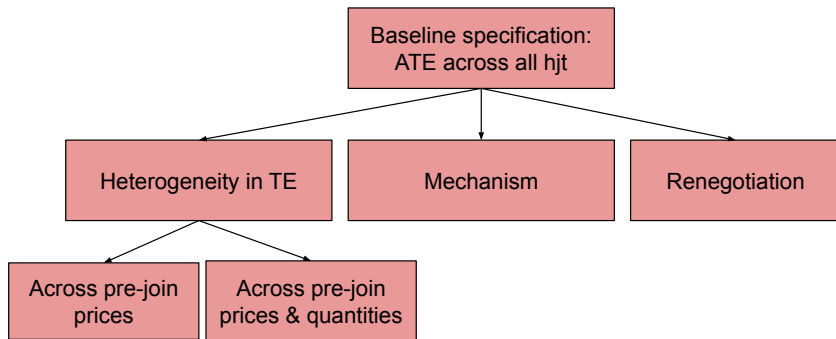


Identification of Information Treatment Effects

New brand entry to identify information effect



- ▶ $t = 1$: A is treated, B is untreated, no data on stent
- ▶ $t = 2$: A is treated, B is untreated with data on stent
- ▶ $t = 3$: A is treated, B is treated with data on stent



Econometrics (Expand)

- ▶ Effects of Information throughout the Price Distribution
 - ▶ Classify hospital-brand into quintile k of the prejoin price distribution
 - ▶ Estimate TE (β_k^{Info}) from the baseline specification for each quintile
 - ▶ Event studies for each quintile

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 - ▶ Event studies for each quintile
- ▶ Treatment Effect and Quantity
 - ▶ Divide sample into hospital-brand with monthly volume below and above the 75th percentile (1 month before joining).
 - ▶ $\beta_{k,lowq}^{Info}$ ($\beta_{k,highq}^{Info}$): TE for quintile k for lower(higher)-volume brands.

► Mechanism

- ▶ β_k^{Ag} : interacting the price quintile k treatment effect with $\mathbf{1}_{\{post_{ht}^{join}\}}$
where: $\mathbf{1}_{\{post_{ht}^{join}\}} = 1$ if h join the database in month t .
- ▶ β_k^{Info} : Further interaction with $\mathbf{1}_{\{(t-t_{min_j}) > 6\}}$
where $\mathbf{1}_{\{(t-t_{min_j}) > 6\}} = 1$ if h first log-in more than 6 months after new brand entered.

Econometrics (Expand)

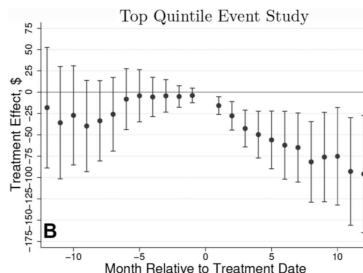
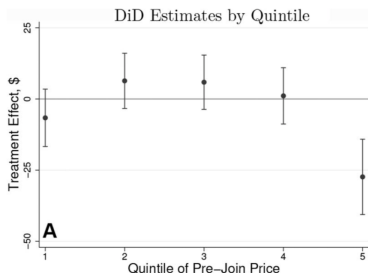
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- ▶ Renegotiation sample:

- ▶ Dependent variables: $1_{reneg_{hjt}}$: Effect of information on rate of renegotiation
- ▶ Sample of renegotiation occurred: Effect of Information condition on Renegotiation

Results - Effect across price quintiles



- ▶ Price drops significantly for top pre-join price quintile
- ▶ Event studies confirm the DD estimation on top quintile and exogeneity of join timing w.r.t price trends

Quantities/Mechanisms/Renegotiation

TREATMENT EFFECTS OF INFORMATION: MECHANISMS									
P_{quintile}					P_{quintile}				
1	2	3	4	5	1	2	3	4	5
A. Treatment-Effect Variation with Quantity Purchased									
Low Quantity: $\beta_{\text{quintile}, \text{Low}}^{\text{Info}}$					High Quantity: $\beta_{\text{quintile}, \text{high}}^{\text{Info}}$				
-4 (6)	9 (6)	9 (6)	5 (6)	-17** (7)	-11 (9)	0 (8)	0 (7)	-9 (8)	-71*** (13)
B. Agency versus AI Mechanisms									
Future Information: $\beta_{\text{quintile}}^{\text{Ag}}$					Concurrent Information: $\beta_{\text{quintile}}^{\text{Info}}$				
-17 (11)	-3 (12)	2 (10)	7 (12)	13 (18)	-1 (6)	7 (5)	5 (5)	-1 (5)	-30*** (7)
C. Renegotiation									
Pr Renegotiation: $1(\{\text{reneg}_{h\neq f}\})$					Upon Renegotiation: $\beta_{\text{quintile}, 1(\{\text{reneg}_{h\neq f}\})}^{\text{Info}}$				
.01 (.01)	.013 (.01)	.016* (.009)	.018 (.011)	.023** (.009)	-14 (15)	4 (14)	1 (19)	-13 (17)	-76*** (18)

Results - Other categories

SPENDING-WEIGHTED AVERAGES OF ESTIMATED TREATMENT EFFECTS (TEs)

	ATE	TE BY PRICE QUINTILE (ALL QUANTITIES)		TE BY PRICE QUINTILE (LOW QUANTITY)		TE BY PRICE QUINTILE (HIGH QUANTITY)		EXPECTED SAVINGS	
		1	5	1	5	1	5	μ (\$/h-year)	σ (\$/h-year)
Commodities (1)	.002 (.004)	.013* (.008)	-.013*** (.005)	.021 (.016)	-.012** (.006)	.005 (.008)	-.016** (.008)	63 (306)	2,828 (1,028)
Other medical/surgical (2)	-.003 (.002)	.003 (.003)	-.017*** (.004)	.004 (.004)	-.021*** (.005)	.002 (.004)	-.006 (.005)	-254 (428)	1,974 (279)
PPIs (3)	-.005*** (.002)	.014*** (.003)	-.033*** (.004)	-.014*** (.003)	-.033*** (.004)	.014*** (.005)	-.039*** (.005)	-1,869 (1,281)	5,492 (893)

NOTE.—Authors' calculations from PriceGuide data, 2009–14. $N_{ij}^{(1)} = 516,582$; $N_{ij}^{(2)} = 1,344,515$; $N_{ij}^{(3)} = 703,544$; $N_h^{(1)} = 748$; $N_h^{(2)} = 701$; $N_h^{(3)} = 601$; superscripts (1)–(3) refer to the three product classes in the first column. Reported specifications include hospital-brand and brand-year fixed effects; alternative fixed effects are shown in the appendix. Standard errors in the category-specific regressions, clustered at the hospital-brand level, are shown in parentheses.

- ▶ Top price quintile: Same prediction with stents but smaller magnitude.
- ▶ Bottom price quintile: Externalities of benchmarking information (prices increase)

Threats

- ▶ Representative of sample
- ▶ No explanation for the effect in different price quintiles
- ▶ Not fully capture the supply-side response
- ▶ Agents can learn over time so that the effect of benchmarking information will be bias toward zero

