Enrollee Reassignment Rules After Health Plan Terminations

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Motivation

- Governments typically procure private companies to deliver public goods.
- This allows governments to save money in public goods provision if the private sector is more efficient.
- Procurement is common in health insurance markets and may help control rising healthcare spending.
- This depends on how competitive is the health insurance market and the types of regulations that are in place.

This paper

- We study a powerful government tool to control the degree of competition in insurance markets: **automatic enrollee assignment rules.**

- We ask:
  - What is the impact of different enrollee reassignment rules on welfare?
  - What is the economic rationale for why some reassignment rules outperform others?

- Approach:
  - Equilibrium model of insurer competition on provider networks in which insurers can respond to the reassignment rules.
  - Trade off between adverse selection and competition in markets without prices.

Outline

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Setting and Data

- Colombian health care system: contributory + subsidized.
- Private insurers provide one national insurance plan.
- Premiums, cost-sharing (income-indexed), and benefits are regulated.
- Insurers choose their provider networks.
- Insurers negotiate health service prices with in-network providers.

Setting and Data

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- Premiums, cost-sharing (income-indexed), and benefits are regulated.
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- Insurers negotiate health service prices with in-network providers.
- Our data:
  - Universe of individual-level insurer choices 2013-2017.
  - Health claims for the contributory system 2013-2017.
  - Insurers' provider listings for the contributory system 2013-2017.

SaludCoop's Termination

- In December 2015, the government terminated the largest health insurer, SaludCoop.

- SaludCoop owned 38 hospitals and 2,354 beds. The hospitals were also terminated.
- SaludCoop operated in 458/1120 municipalities.

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- SaludCoop owned 38 hospitals and 2,354 beds. The hospitals were also terminated.
- SaludCoop operated in 458/1120 municipalities.
- SaludCoop's enrollees were transferred to Cafesalud.
- Had to remain in Cafesalud for 90 days, then could switch.
- Cafesalud was itself terminated in 2019.

SaludCoop's Termination

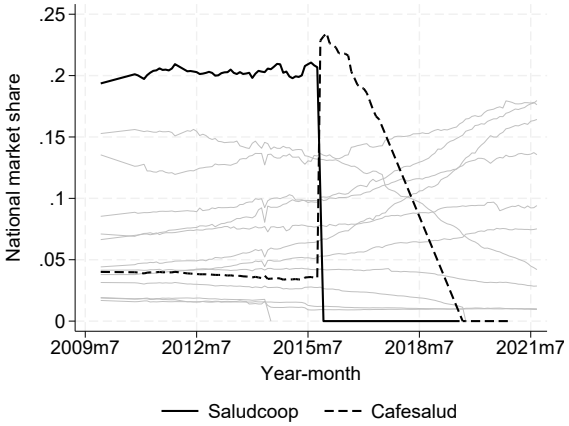


Figure: National Market Shares

SaludCoop's Termination

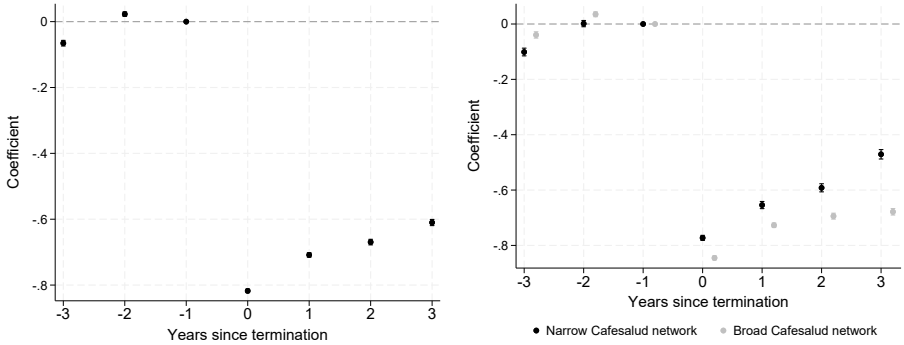
Table: Switching Rate

Year	Full sample (1)	Continuously enrolled (2)
2014	0.198	0.050
2015	0.137	0.028
2016	0.296	0.202
2017	0.152	0.067
Observations	75,918,492	49,784,135

Important Facts about the Market

- Individuals are highly inertial to their insurer.
  - Implies insurers compete mainly on new enrollees.
- Provider network breadth (fraction of covered providers by an insurer) varies substantially across insurers, services, and markets. The IQ range is 0.3-1.0. Expand
  - Unusual given the strong regulation of plan characteristics.
- Insurers have heterogeneous marginal and administrative costs. Expand
- Consumers of different health status have different match values with the same insurer. Expand

Impact of Observed Reassignment Rule on Spending



(a) Total health care spending (b) By Cafesalud's pre-period network

Figure: Impact of SaludCoop's Termination on Outcomes

Outline

Equilibrium Model of Network Breadth

Insurers, denoted by j, simultaneously choose their network breadth in every market H_{jm} to maximize the present discounted value of their profits across consumers type θ.

$$\Pi_{jm}(H_m) = \sum_{\theta} \pi_{ijm}(H_m, \theta, y) N_{\theta my} + \sum_{t=1}^{T} \zeta^t \sum_{\theta', y'} \underbrace{(1 - \rho_{\theta'}) \mathcal{P}(\theta', j | \theta, y) \pi_{ijm}(H_m, \theta', y) N_{\theta' my}}_{FP_{\theta jmt}}$$

$$- \underbrace{(\omega H_{jm} + \nu_{jm}) H_{jm}}_{FC_{jm}}$$

Per-Enrollee Profit

$$\Pi_{jm}(H_m) = \sum_{\theta} \pi_{ijm}(H_m, \theta, y) N_{\theta my} + \sum_{t=1}^{T} \zeta^t \sum_{\theta', y'} \underbrace{(1 - \rho_{\theta'}) \mathcal{P}(\theta', j | \theta, y) \pi_{ijm}(H_m, \theta', y) N_{\theta' my}}_{FP_{\theta jmt}}$$

$$- \underbrace{(\omega H_{jm} + \nu_{jm}) H_{jm}}_{FC_{jm}}$$

$$\pi_{ijm}(H_m, \theta, y) = (\underbrace{R_{\theta m}}_{\text{risk adjust.}} - \underbrace{(1 - r_{\theta})}_{\text{1-coins. rate}} \underbrace{AC_{\theta jm}(H_{jm}))}_{\text{marginal cost}} \underbrace{s_{ijm}(H_m, y)}_{\text{demand}}$$

Demand

$$\Pi_{jm}(H_m) = \sum_{\theta} \pi_{ijm}(H_m, \theta, y) N_{\theta my} + \sum_{t=1}^{T} \zeta^t \sum_{\theta', y'} \underbrace{(1-\rho_{\theta'}) \mathcal{P}(\theta', j|\theta, y) \pi_{ijm}(H_m, \theta', y) N_{\theta' my}}_{FP_{\theta jmt}}$$

$$- \underbrace{(\omega H_{jm} + \nu_{jm}) H_{jm}}_{FC_{jm}}$$

$$u_{ijmt} = \beta_i \underbrace{H_{jmt}}_{\text{network}} + \alpha_i \underbrace{r_\theta AC_{\theta jmt}(H_{jmt})}_{\text{oop cost}} + \lambda_i \underbrace{y_{ijm,t-1}}_{\text{past choice}} + \underbrace{\xi_{\theta j}}_{\text{match value}} + \varepsilon_{ijmt}$$

Marginal Cost

$$\Pi_{jm}(H_m) = \sum_{\theta} \pi_{ijm}(H_m, \theta, y) N_{\theta my} + \sum_{t=1}^{T} \zeta^t \sum_{\theta', y'} \underbrace{(1 - \rho_{\theta'}) \mathcal{P}(\theta', j | \theta, y) \pi_{ijm}(H_m, \theta', y) N_{\theta' my}}_{FP_{\theta jmt}}$$

$$- \underbrace{(\omega H_{jm} + \nu_{jm}) H_{jm}}_{FC_{jm}}$$

$$AC_{\theta jmt} = exp(\tau_1 H_{jmt} + \tau_2 H_{jmt}^2 + \gamma_\theta + \eta_m + \delta_j + \epsilon_{\theta jmt})$$

Transition Probability

$$\Pi_{jm}(H_m) = \sum_{\theta} \pi_{ijm}(H_m, \theta, y) N_{\theta my} + \sum_{t=1}^{T} \zeta^t \sum_{\theta', y'} \underbrace{(1 - \rho_{\theta'}) \mathcal{P}(\theta', j|\theta, y) \pi_{ijm}(H_m, \theta', y) N_{\theta' my}}_{FP_{\theta jmt}}$$

$$- \underbrace{(\omega H_{jm} + \nu_{jm}) H_{jm}}_{FC_{jm}}$$

$$\mathcal{P}(\theta', j|\theta, y) = P(\theta'|\theta) P(j|y, \theta)$$

Dropout Probability

$$\Pi_{jm}(H_m) = \sum_{\theta} \pi_{ijm}(H_m, \theta, y) N_{\theta my} + \sum_{t=1}^{T} \zeta^t \sum_{\theta', y'} \underbrace{(1 - \rho_{\theta'}) \mathcal{P}(\theta', j | \theta, y) \pi_{ijm}(H_m, \theta', y) N_{\theta' my}}_{FP_{\theta jmt}}$$

$$- \underbrace{(\omega H_{jm} + \nu_{jm}) H_{jm}}_{FC_{jm}}$$

Fixed Cost and Structural Error

$$\Pi_{jm}(H_m) = \sum_{\theta} \pi_{ijm}(H_m, \theta, y) N_{\theta my} + \sum_{t=1}^{T} \zeta^t \sum_{\theta', y'} \underbrace{(1 - \rho_{\theta'}) \mathcal{P}(\theta', j | \theta, y) \pi_{ijm}(H_m, \theta', y) N_{\theta' my}}_{FP_{\theta jmt}}$$

$$- \underbrace{(\omega H_{jm} + \nu_{jm}) H_{jm}}_{FC_{jm}}$$

Outline

Identification

- Preference for network breadth and parameters of average cost function are identified from discontinuous changes in networks after SaludCoop's termination. Event study
- Preference for OOP costs is identified from exogenous changes in choice sets and income that determines the coinsurance rate.
- Inertia is identified only from SaludCoop's enrollees who leave Cafesalud.

Outline

Estimation Results: Demand

	Network breadth	OOP spending	Incumbent
Main coefficient	3.97 (0.04)	-4.13 (0.08)	3.90 (0.01)
Interactions			
Cancer	-0.91 (0.05)	2.61 (0.11)	-0.13 (0.01)
Diabetes	-0.12 (0.08)	3.61 (0.09)	-0.07 (0.01)
Cardio	0.14 (0.04)	1.91 (0.10)	-0.16 (0.01)
Pulmonary	0.67 (0.13)	3.38 (0.11)	-0.21 (0.02)
Renal	-0.25 (0.15)	3.48 (0.09)	-0.11 (0.03)
Other	-0.05 (0.06)	3.15 (0.10)	0.14 (0.01)
Healthy	(ref)	(ref)	(ref)
Individuals		500,000	
Observations		24,093,373	
Pseudo-R squared		0.62	

Strong preferences for broad networks. Average switching cost equals 1.3 min wage.

Estimation Results: Marginal Cost

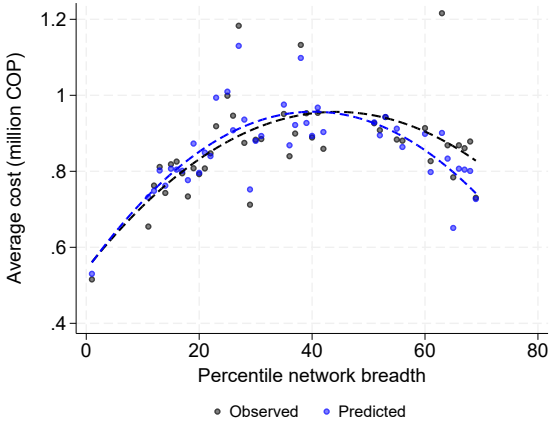


Figure: Marginal Cost Fit

Estimation Results: Fixed Cost

- Fixed cost model is over-identified: model predicts one choice of network breadth but we have several years of data.
- Estimate fixed costs using state of the world as of 2015.
- Then use estimates to predict network breadth in 2016, out of sample.

Out-of-Sample Fit

Impose observed reassignment rule: SaludCoop's enrollees are reassigned to Cafesalud.

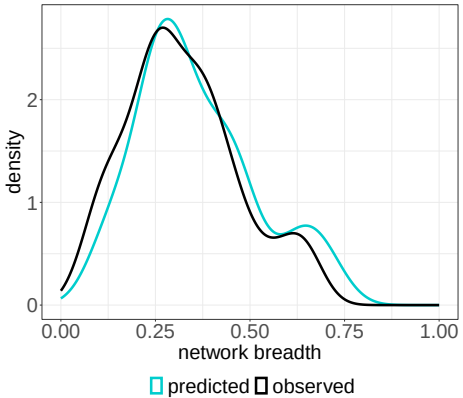


Figure: Out-of-sample Prediction of Provider Network Breadth

Outline

Reassignment Rules

1. *Observed*: reassigned to Cafesalud.
2. *Random*: randomly reassigned to incumbent insurers.
3. *Overlap*: reassigned to the incumbent insurer with the greatest network overlap with SaludCoop.
4. *Proportional*: reassigned to incumbent insurers in proportion to their 2015 market shares.
5. *Broadest*: reassigned to the incumbent insurer with the broadest provider network.
6. *Largest*: reassigned to the incumbent insurer with the largest market share in 2015 (excluding SaludCoop).

Reassignment Rules

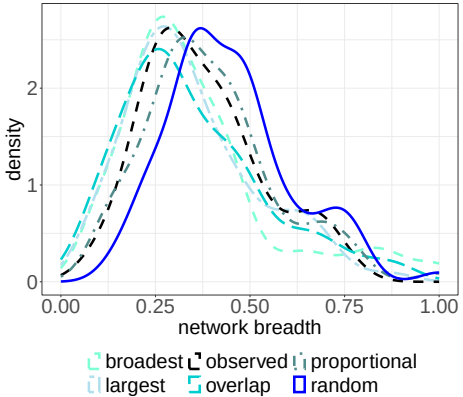


Figure: Counterfactual Distribution of Network Breadth

Reassignment Rules

Table: Counterfactual Outcomes Under Reassignment Rules

	Network breadth	Consumer surplus	Adverse selection	Average cost
Observed	0.36	2.62	9.9	0.71
Overlap	0.35	2.66	9.9	0.75
Random	0.45	2.72	11.3	0.69
Proportional	0.39	2.67	10.8	0.74
Largest	0.35	2.67	10.2	0.76
Broadest	0.36	2.69	11.4	0.77

Why Does Random Reassignment Work?

- Reduced market power.
  - Veiga and Weyl (2016) and Mahoney and Weyl (2017) show that imperfect competition enhances welfare in markets with adverse selection.
  - But this no longer holds in markets without prices: no offset for offering low quality products.

- Increased switching after reassignment period particularly among the healthy and profitable—who *also* have a preference for broad networks.

Why Does Random Reassignment Work?—Market Power

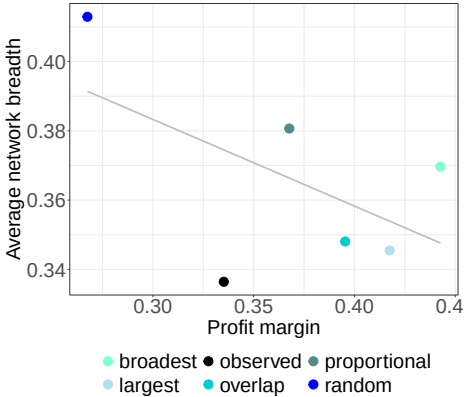


Figure: Counterfactual Profit Margins and Network Breadth

Why Does Random Reassignment Work?—Health and Switching

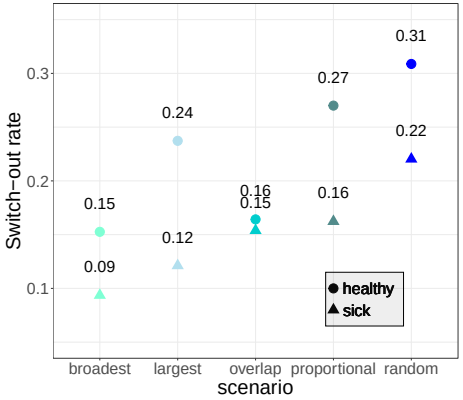


Figure: Counterfactual Switching Rates Among SaludCoop's Enrollees by Health Status

Outline

Conclusions

- Public procurement helps control government spending when private companies are efficient, which may depend on the degree of competition.
- In health insurance markets, the government can impact the degree of competition with automatic enrollment assignment rules.
- We show that random reassignment outperforms other reassignment rules in terms of several outcomes.
- Random reassignment works not because it reduces adverse selection but because it reduces market power.
- We provide a policy recommendation for how to deal with health plan terminations.

Thank You

References

Mahoney, N. and Weyl, G. (2017). Imperfect Competition in Selection Markets. *The Review of Economics and Statistics*, 99(4):637–651.

Veiga, A. and Weyl, E. G. (2016). Product Design in Selection Markets. *The Quarterly Journal of Economics*, 131(2):1007–1056.

Provider Network Breadth

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Table: Summary of Network Breadth

Insurer	Main cities
EPS001	0.13 (0.10)
EPS002	0.36 (0.16)
EPS003	0.18 (0.08)
EPS005	0.24 (0.07)
EPS008	0.10 (0.08)
EPS010	0.22 (0.16)
EPS012	0.09 (0.14)
EPS013	0.22 (0.09)
EPS016	0.52 (0.15)
EPS017	0.18 (0.13)
EPS018	0.12 (0.14)
EPS023	0.16 (0.10)
EPS037	0.32 (0.06)

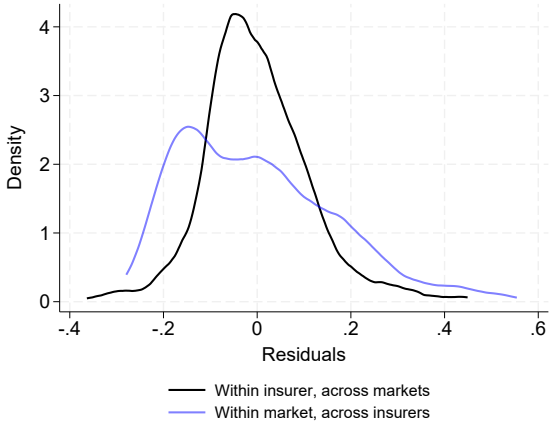

Figure: Residual Variation in Networks

Marginal and Administrative Costs

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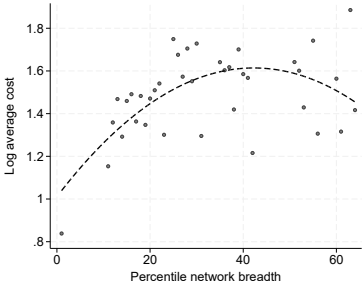
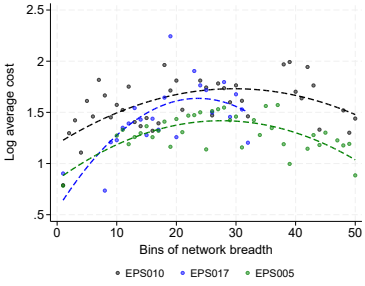
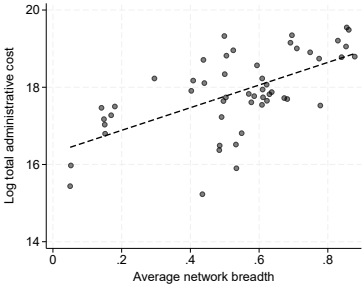


(a) Marginal cost



(b) Marginal cost by insurer



(c) Admin cost

Figure: Empirical Relation Between Average Cost, Admin Cost and Network Breadth

Match Values

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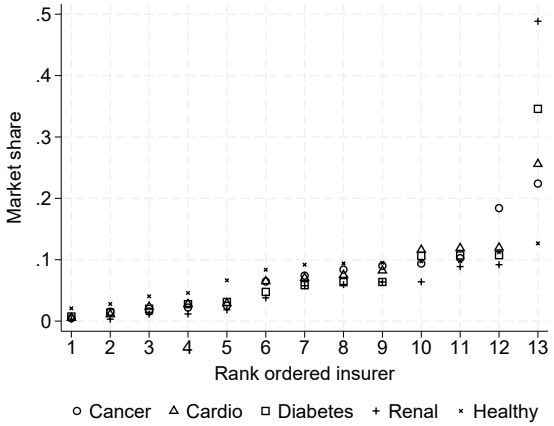

Figure: Match values by consumer type

Identification of Network Breadth

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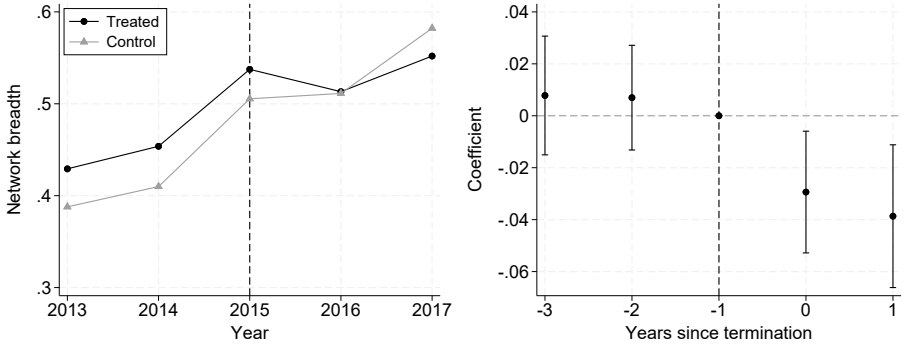

(a) Raw trends

(b) All markets

Figure: Impact of SaludCoop's Termination on Networks

Treated group: Municipalities where SaludCoop operated.