Commitment, Competition, and Preventive Care Provision

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8/7/24
DSE Conference

7 out of 10 deaths in US are caused by preventable diseases. (CDC, 2021)

Motivation

- Preventive care: prevention, early detection, disease management (Kenkel, 2000)
  - Vaccines, cancer screenings, monitor blood sugar level for diabetes patients, ...
- Increases life expectancy, reduces future costs (CDC, 2021; USPSTF, 2021)
  - Vaccines prevent diseases, death; diabetes care prevents diabetic complications; ...
- Under-provided/utilized compared to govt./medical guidelines (ACA, 2010; HHS, 2023)
  - lead to an extra disease burden of over a trillion dollars annually (Devol et al., 2007)

→ What leads to prevention underprovision in equilibrium?

Investment Externalities

- Key friction: investment externalities from insurer competition

  Insurer competition + consumer turnover (lack of consumer commitment)

  $\rightarrow$ Insurers do not internalize all future returns

  $\rightarrow$ Insurers reduce preventive investment in consumers' health

$\Rightarrow$ Key trade-off: investment externalities (low investment) vs. market power (high prices)

$\mathcal{Q}$**:** How does insurer competition affect investment, health, and welfare?

This Paper

$\mathcal{Q}$: How does insurer competition affect investment, health, and welfare?

1. New evidence (regression)
   - Consumer turnover reduces insurers' preventive investment (nationwide exchange)

2. New framework (model)
   - Dynamic insurer competition with endogenous quality & endogenous health (UT)

3. New insight (simulation)
   - Efficiency losses from competition due to investment externalities can be substantial
   - Policy options: consider price-invest. tradeoff + role of govt. mandate

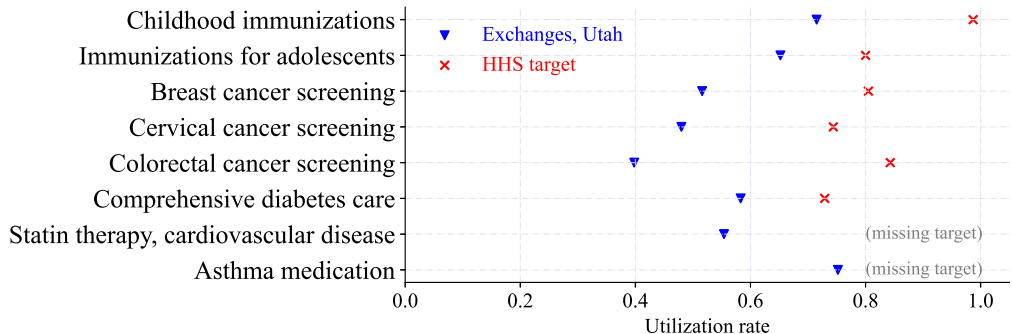
Empirical Setting

- The individual exchange market
  - Direct consumer-insurer interactions
  - High consumer turnover: in/out exchanges (30%) + across insurers within mkt. (20%)
  - Mandatory coverage, free to consumers
  - Insurer invest: remind, educate consumers + incentivize providers

- Data
  - Insurance product choice, claims records: Utah All Payer Claims Data
  - Preventive utilization, investment: CMS quality rating system, medical loss ratio

Low Preventive Care Utilization/Provision

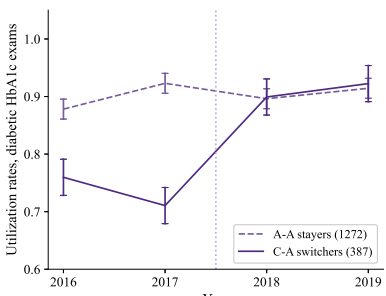
- Study procedures: well-known to save future costs + guidelines available to measure
  Medical studies (CDC, 2021; USPSTF 2021; NCI 2021; ...) + insurer's revealed preferences

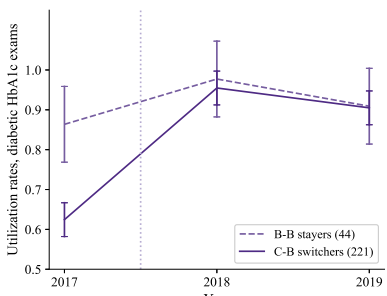


The utilization rate is computed for those eligibles for each preventive procedure following HEDIS guidelines.
Data sources: Utah All Payer Claims Data, and Department of Health and Human Services (HHS) websites.

Fact 1: Insurers are important in prevention utilization

- Quasi-experiment: Insurer exit, compare utilization before/after, switcher/stayer
- Significant differences in procedure utilization rates for switchers pre and post switch
- Insignificant differences between switchers and stayers post switch
- Move to insurer w. 1pp ↑ utilization → consumer's utilization prob. ↑ 0.9pp





Fact 2: Consumer turnover reduces insurers' prevention provision

- Regress investment on share of consumers retained on the exchange, at state-year level
- IV for turnover: national-industry job hiring (shift) + industry-st. employment (share)
- 2SLS: 1 pp ↑ retention → 0.79 pp ↑ utilization, \$5.3 ↑ per member preventive investment
- Effects larger for procedures w. short returns span; insurers w. small share in empl. mkt.

	Prevention utilization†	Preventive investment
Exchange retention†	**0.786***	**5.31****
	(0.409)	**(2.37)**
Baseline mean	64.8	107
N	88	141

†: Utilization and retention are measured in 0-100 percentage points.
2SLS regression includes state, year FEs. SEs are clustered at state level.

Overview of the Model

- Consumers
  - Repeated choices: do not commit to stay with one insurer
- Insurers
  - Invest: tradeoff static costs - higher future profits, lower health risks
  - Price: tradeoff market power - investment externalities
- Infinite period dynamic game (MPNE): insurers $\rightarrow$ consumers $\rightarrow$ state transition $\rightarrow$ ...
- Novelty: insurers' dynamic incentives + endogenous population health

Equilibrium Model - Insurance Demand

$$u_{ijt} = \underbrace{(\alpha_0 + \alpha_1 \mu_{it-1}) p_{jt}}_{\text{price sensitivity by health status}} + \underbrace{(\rho_0 + \rho_1 \mu_{it-1}) e_{jt}}_{\text{prevention pref. by health status}} + \underbrace{\gamma \mu_{it-1} co\_ins_j}_{\text{out-of-pocket expenses}} + \underbrace{\eta \mathbf{1}[d_{it-1} \neq j]}_{\text{inertia}} + \theta X_{jt} + \xi_{jt} + \epsilon_{ijt}$$

- Forces
  - Repeated choices, do not commit to stay with one insurer

- Key Primitives
  - Inertia η
  - Preference for price α, preventive care ρ, medical expenses γ

Equilibrium Model - Insurance Supply

$$V_f(\vec{s}_{t-1}, \vec{\mu}_{t-1}) = \max_{\vec{p}_{ft}, x_{ft}} \Big\{ \underbrace{\pi_{ft}(\vec{s}_{t-1}, \vec{\mu}_{t-1}, \vec{x}_t, \vec{p}_t)}_{\text{flow profit}} + \underbrace{\beta \int V_f(\vec{s}_t, \vec{\mu}_t) \overbrace{g_f(\vec{s}_t, \vec{\mu}_t | \vec{s}_{t-1}, \vec{\mu}_{t-1}, \vec{x}_t, \vec{p}_t)}^{\text{state transitions}} dF_{\vec{\mu}_t}}_{\text{expected future profit}} \Big\}$$

- Forces
  - Invest x_{ft}: tradeoff static costs - higher future profits, lower health risks
  - Price p_{ft}: tradeoff market power - investment externalities

- Key Primitives
  - Investment cost $x_f(e_{ft})$: dollar expenses in prevention $\rightarrow$ utilization
  - Returns to prevention $g(\mu_t | \mu_{t-1}, e_{ft})$: current health + utilization $\rightarrow$ next period health

Equilibrium Model - Insurance Supply

$$V_f(\vec{s}_{t-1}, \vec{\mu}_{t-1}) = \max_{\vec{p}_{ft}, x_{ft}} \Big\{ \underbrace{\pi_{ft}(\vec{s}_{t-1}, \vec{\mu}_{t-1}, \vec{x}_t, \vec{p}_t)}_{\text{flow profit}} + \underbrace{\beta \int V_f(\vec{s}_t, \vec{\mu}_t) \overbrace{g_f(\vec{s}_t, \vec{\mu}_t | \vec{s}_{t-1}, \vec{\mu}_{t-1}, \vec{x}_t, \vec{p}_t)}^{\text{state transitions}} dF_{\vec{\mu}_t}}_{\text{expected future profit}} \Big\}$$

- Oblivious assumption for MPNE
  - Keep track of "average" enrollees of every competitor
  - State space: vector of market shares $\vec{s}_{t-1}$, average health status by insurer $\vec{\mu}_{t-1}$
- Computation: extended trilinear interpolation, polynomial approximations, etc

Key Market Features Implied by Model Estimates

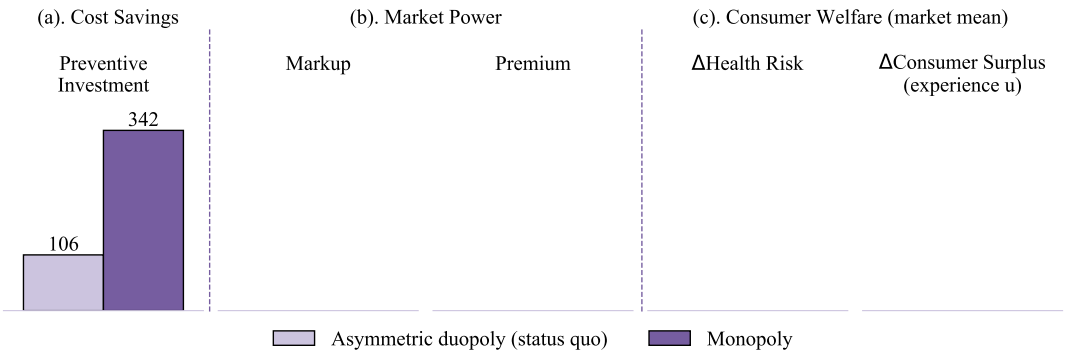
1. Consumers
   - Relatively price elastic, -5.47
   - Low willingness-to-pay for prevention
   - No meaningful diff. in preference for prevention by health $\rightarrow$ not effective selection tool

2. Insurers
   - Cost savings motives dominate static market share motives for investment
   - Costly preventive investment, $\uparrow$ 3-4 times from \$174 to achieve govt. targets
   - Consumer turnover impact investment returns, $\uparrow$ competitor $\rightarrow$ 28.1% $\downarrow$ cost savings

3. Model fit: predicted effects of retention on investment match reduced-form well

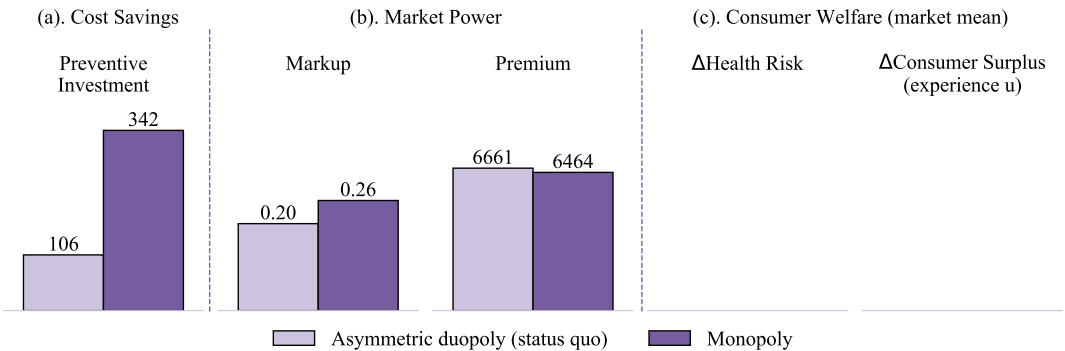
Welfare Effects of Insurer Competition

- ↑ **invest**: ↓ turnover, capture more returns + no free riding



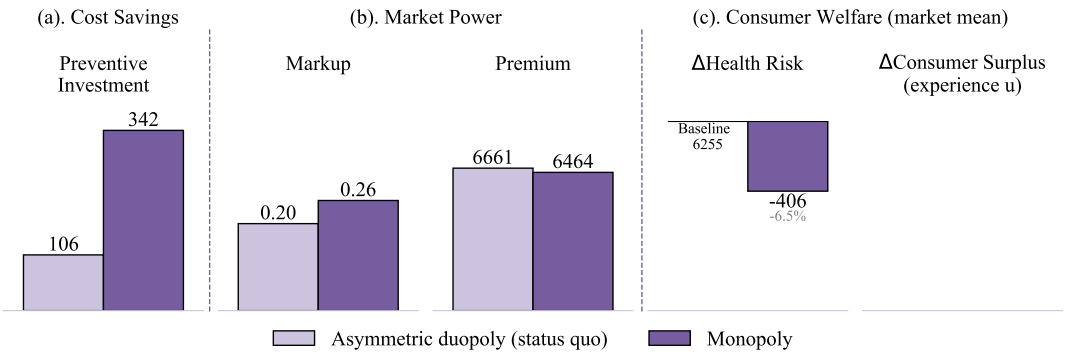
Welfare Effects of Insurer Competition

- $\sim$ **p**: $\uparrow$ investment, $\downarrow$ MC $\approx$ $\uparrow$ markup



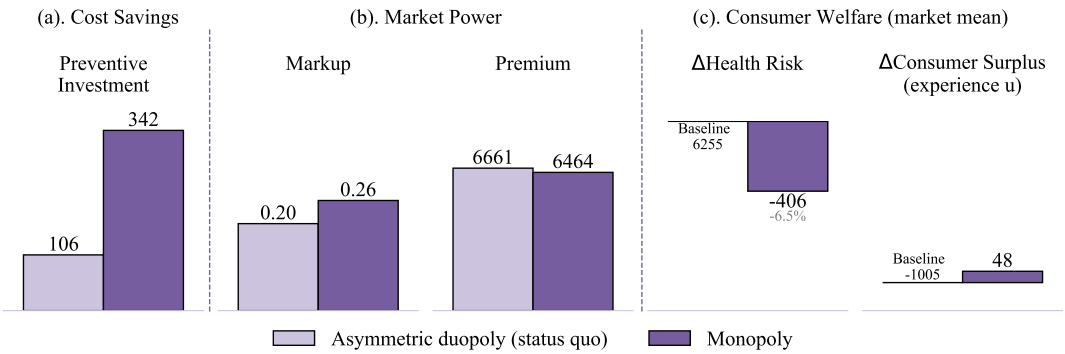
Welfare Effects of Insurer Competition

- ↓ **health risk**: invest. per insured + share of insured cons. who receive prevention



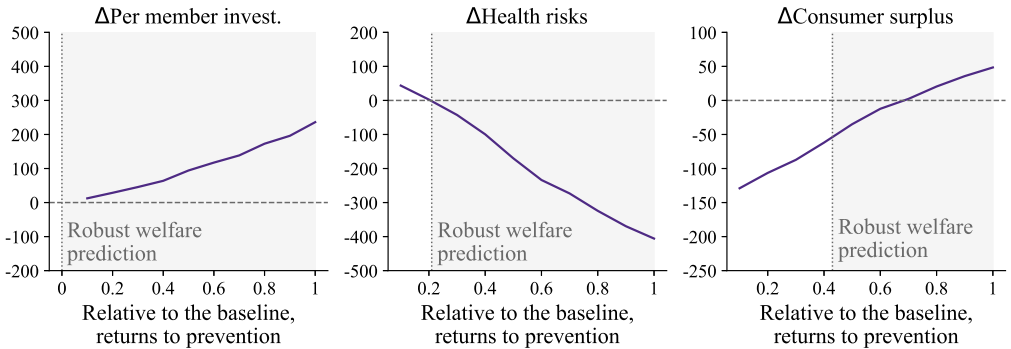
Welfare Effects of Insurer Competition

- $\sim$ **CS**: welfare distortions of underinvestment about same size as high pricing power



Welfare Effects of Insurer Competition

- ↓ health risks, ∼ CS: hold for a reasonable range of returns to prevention parameter



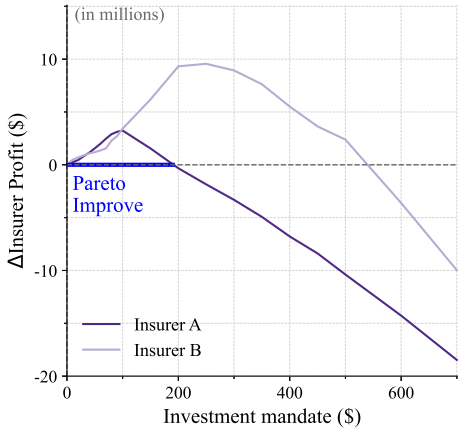
Welfare Effects of Insurer Competition

$\rightarrow$ Efficiency losses of competition from investment externalities can be substantial

- Next, what policies can improve investment and welfare?

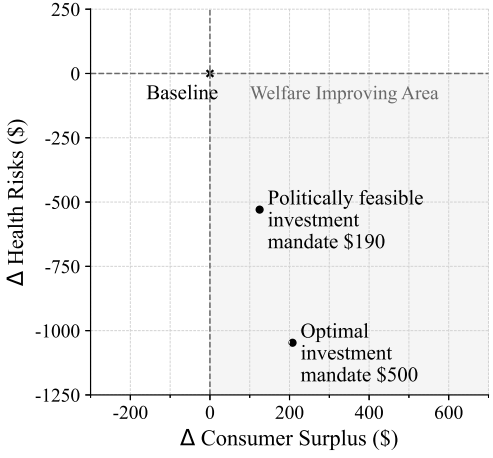
Policy Simulation: Investment Mandates

- Investment mandate could resolve insurers' prisoners' dilemma



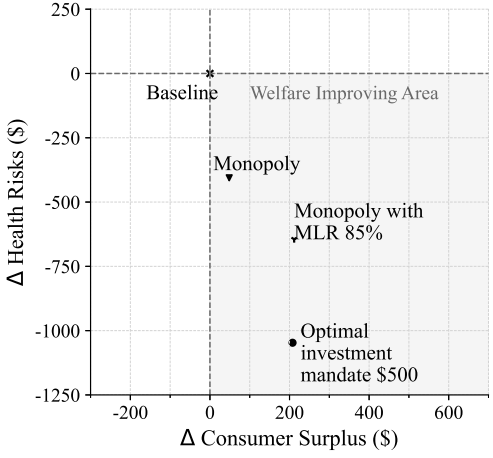
Policy Simulation: Investment Mandates

- Optimal mandate: cost savings vs. premium increases → consider invest.-price tradeoff



Policy Comparison

- Direct quality regulation is most effective in addressing investment externalities



Conclusion

- **Summary: efficiency losses of competition due to investment externalities**
  - New evidence: consumer turnover reduces insurers' preventive investment
  - New framework: dynamic insurer competition with endogenous prod. char. & health
  - New insight: importance of long-run quality incentives; tradeoff w. market power
  - Policy implications: direct quality regulation can improve investment, welfare

Thank you!

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