Adverse Selection and Equity in Insurance Markets with Guaranteed Renewable Contracts: Evidence from Chile

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THE UNIVERSITY
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at CHAPEL HILL

Roadmap

1. Research Question and (Brief) Institutional Background
2. Empirical Demand Model
3. Results & Counterfactuals

Presentation Outline

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The Chilean Health Insurance System

- Split into two segments:
  1. Private market offering guaranteed renewable contracts (GRCs),
  2. Public option.
- GRCs offer long-term reclassification risk protection: renewal offer, plan characteristics fixed, premium changes regulated.
- Mandatory enrollment into either option, with 7%+ income going towards premiums.

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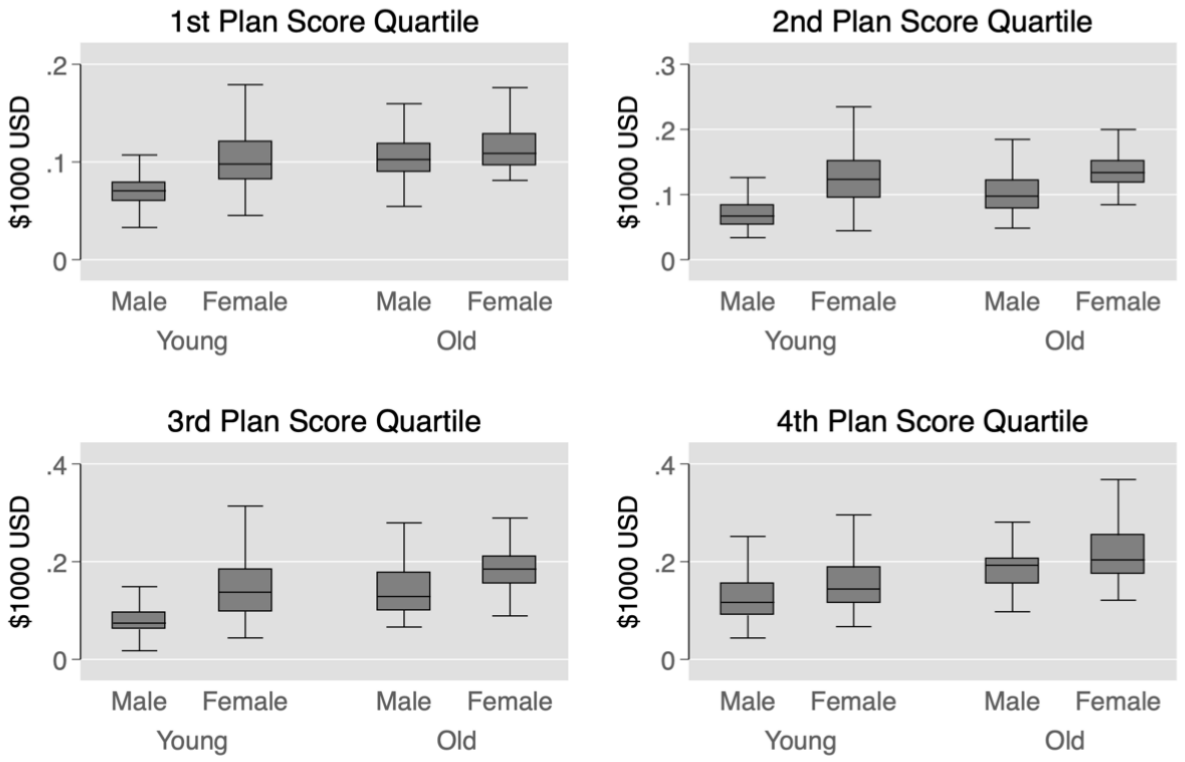
- GRCs offer long-term reclassification risk protection: renewal offer, plan characteristics fixed, premium changes regulated.
- Mandatory enrollment into either option, with 7%+ income going towards premiums.
- Notably, GRCs in this setting can be priced based only on **gender** and **age**, and *not health status*. However, adverse selection (mostly) ruled out by screening on pre-existing conditions at enrollment.

$$P_{ijt} = P^{B}_{jt} \times r(\textit{enrollment age}_i, \textit{gender}_i)$$

Unequal Premiums Across Genders

Figure 5: Premiums paid private market



Equity and Proposed Gender-Based Pricing Ban

- Private insurance market services predominantly richer and younger patients, and more men than women ($\sim$3x wages, 50% below 35, 60%+ men).
- In response to widespread protests in 2019, **gender-based pricing is banned.**

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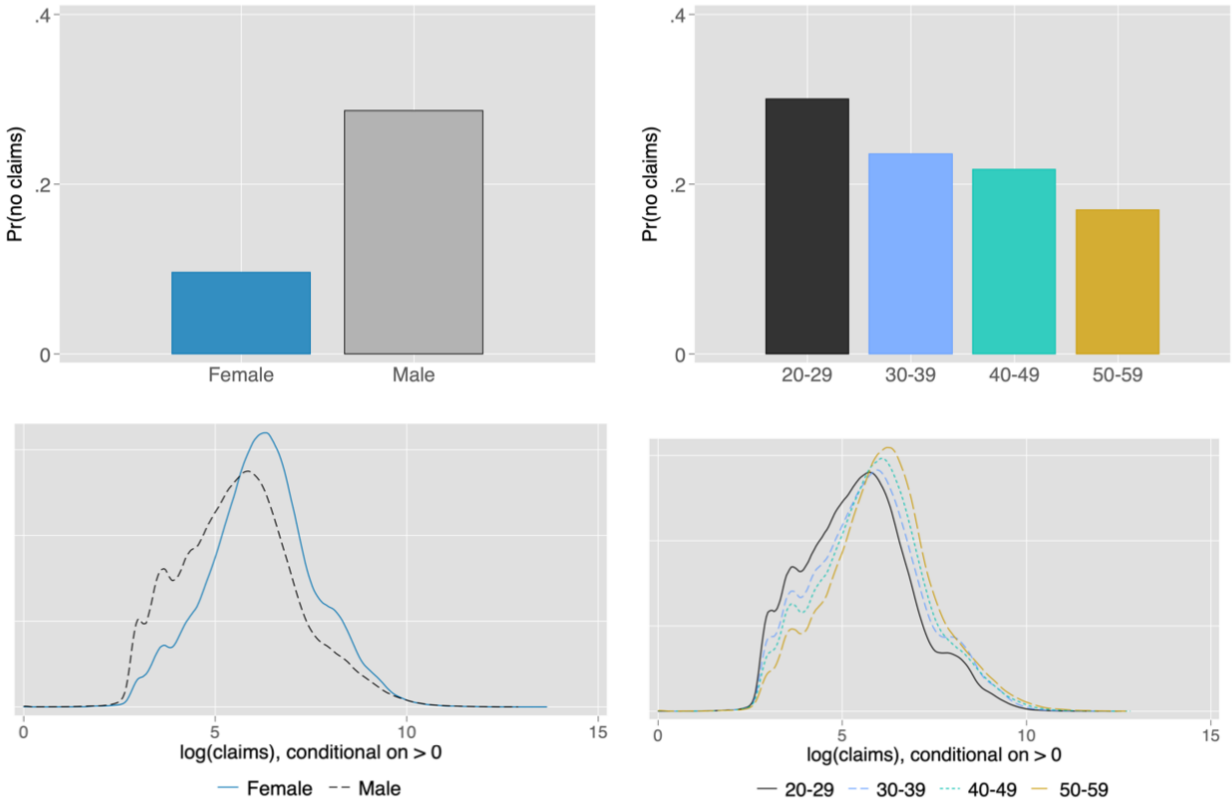
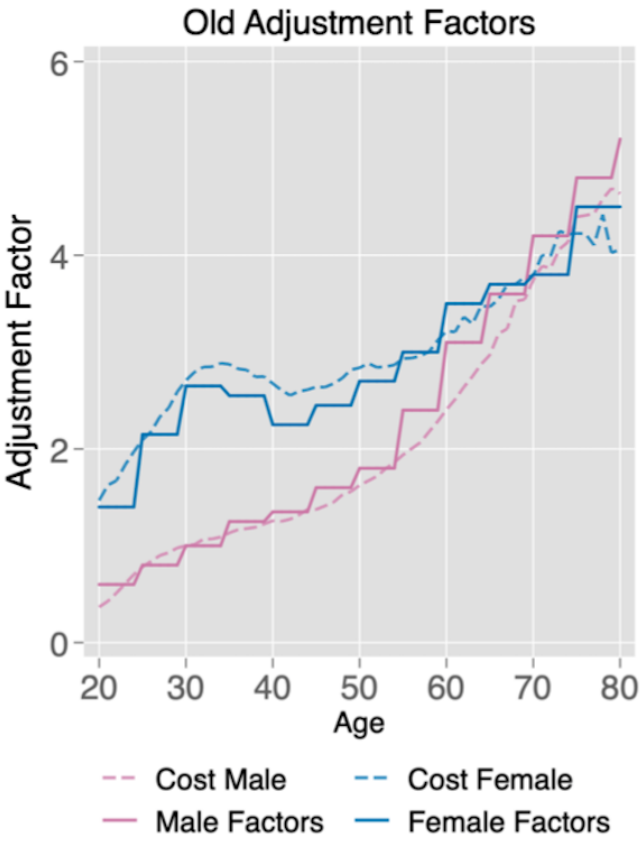
- Why did women face higher premiums for the same plan?
- On average, women and older people have much higher health care expenditures.

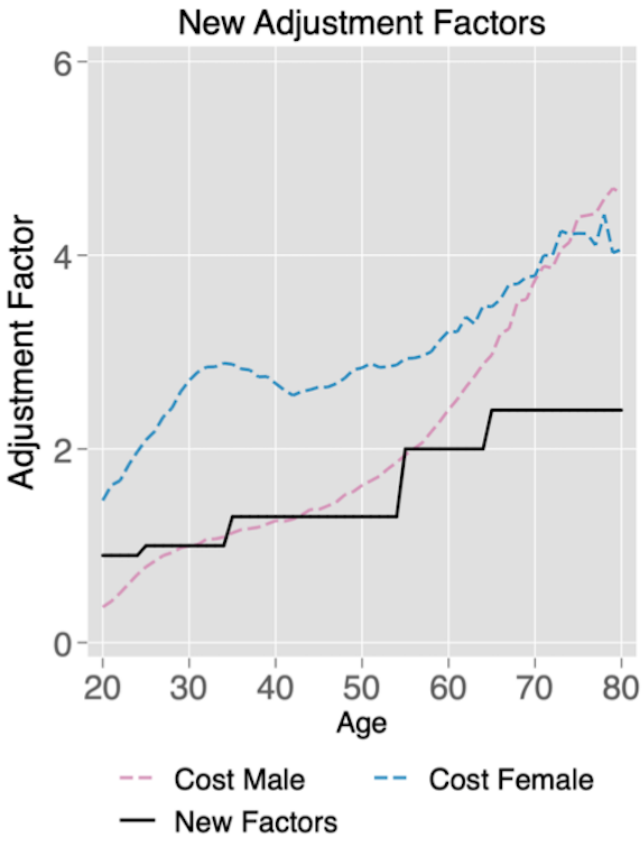
Unequal Health Care Spending by Gender and Age

Figure 6: Health care costs by gender and age groups



Risk-Rating Factors Before and After Ban





What is the Predicted Impact of the Ban?

- GRCs protect enrollees against reclassification, but also force lower-quality plan enrollees to cross-subsidize higher-quality plan enrollees (due to selection).
- Thus, enrollees on the margin between public option and low-quality private plans will be most impacted.
- Evidence of price sensitivity to premiums implies that lapsing will be triggered by rising prices in the private market.
- With higher-WTP for women and older people, premiums will rise, lower-income males will substitute out of the market, and women will enter.

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Two-Stage Dynamic Discrete Choice Demand Model

- Stage 1: determines the probability that a household becomes active and makes a choice of insurance plan (conditional on changes in own-plan premiums, income, and family size):

$$s^a_{ft} \equiv Pr(active_{ft} = 1|\boldsymbol{x_{0t}}) = \frac{exp(\boldsymbol{x_{0t}}\tau^{\mu})}{1+exp(\boldsymbol{x_{0t}}\tau^{\mu})}$$

- Stage 2: conditional on becoming active, households choose a plan that maximizes utility:

$$u_{fjt} = \alpha_f p_{fjt} + \beta_f \sum_{i \in f} EU_{ijt} + \phi X_{fj} + \gamma_f y_{fjt-1} + \epsilon_{ijt}$$

  - EU_{ijt} (expected utility of hospital networks in plan j) estimated separately in (standard) hospital discrete-choice model.[1]
  - Given T1EV errors, standard conditional probability of choosing plan j denoted $s^y_{ftj} \equiv Pr(y_{ft} = j|active_{ft} = 1)$.

[1] À la Ho (2006), Gowrisankaran et al (2015), etc.

MLE & (Important) Identification

- Identification relies on households making decisions with and without frictions over the same menu of plans (due to new enrollees).
- Exclusion restrictions allow for clean identification between first and second stages (e.g., consumers only consider alternative premiums once active).
- Parametric specification allows for standard MLE:

$$\mathcal{L}_f(\theta) = Pr(y_{f1} = j_{f1}, ..., y_{fT} = j_{fT} | \theta, h_f) = \prod_{t=1}^{T} Pr(y_{ft} = j_{ft} | \theta, h_f)$$

$$Pr(y_{ft} = j_{ft} | \cdot) = \begin{cases} s^y_{ftj} & default_{ft} = 0 \\ s^a_{ft} \times s^y_{ftj} & default_{ft} = 1 \wedge y_{ft-1} \neq j \\ s^a_{ft} \times s^y_{ftj} + (1 - s^a_{ft}) & default_{ft} = 1 \wedge y_{ft-1} = j \end{cases}$$

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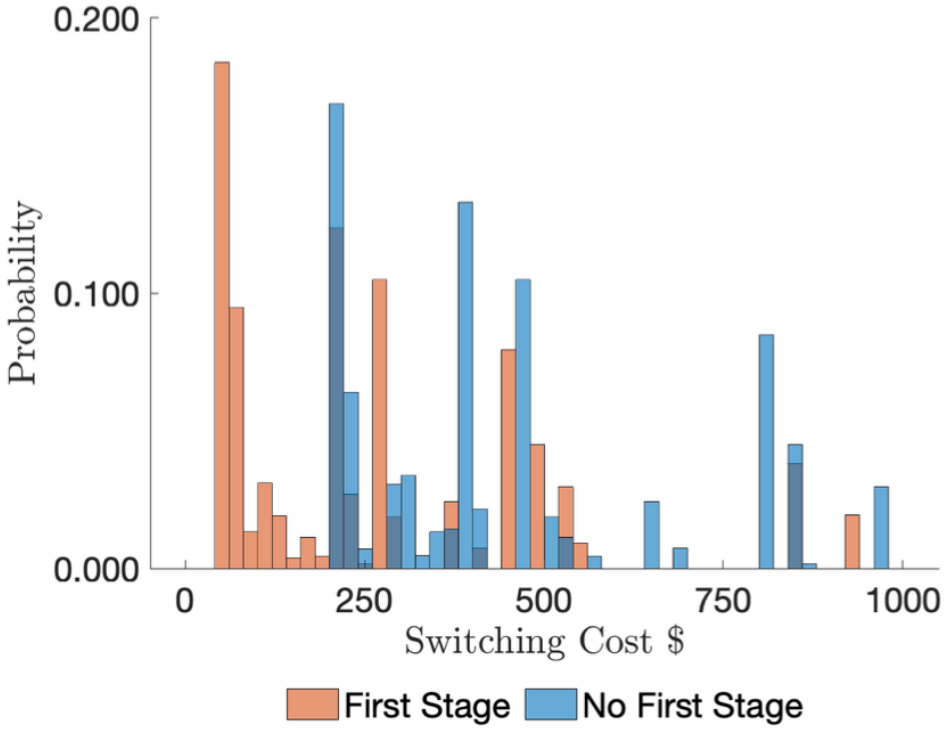
Main Findings

1. Households active with $\sim 30\%$ probability, and increasing premiums by 6.4% (average change) increases this probability by 15.5%,
2. Women and older enrolles are less price sensitive, and have greater WTP for higher-quality plans,
3. Including the first stage matters greatly for switching costs.

The results suggest that we should observe increased adverse selection once the gender-based pricing ban is implemented.

The Effect of GRCs: Passiveness

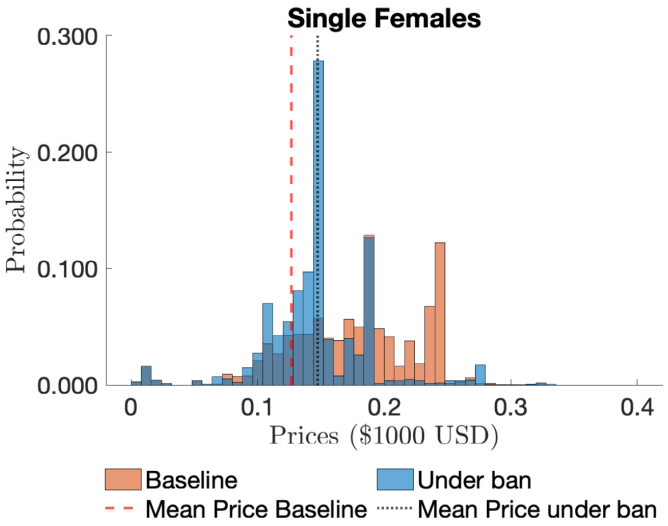
Figure 8: Switching costs

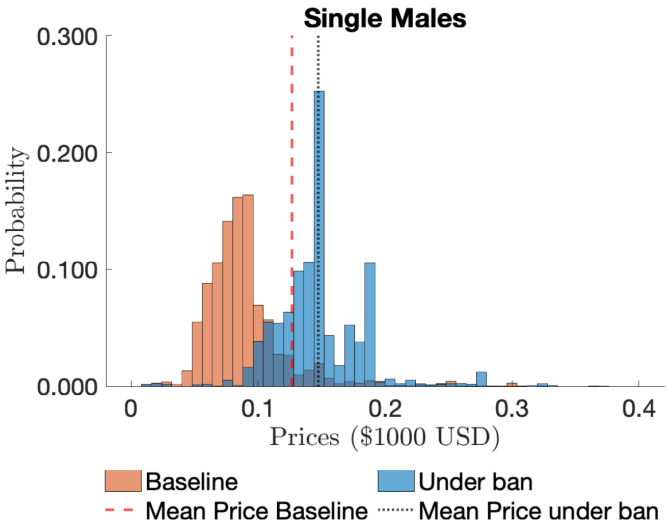


Simulating the Ban

- Post-ban, there will be concerns of increased adverse selection on both the extensive and intensive margins.
- Mitigation strategies:
  1. Risk adjustment transfers ("cost-sharing"),
  2. Subsidies to low-income enrollees in private market.

Premiums Change as Expected





Surplus Change Depends on Society's Preferences

Figure 11: Consumer surplus impact and income inequality aversion

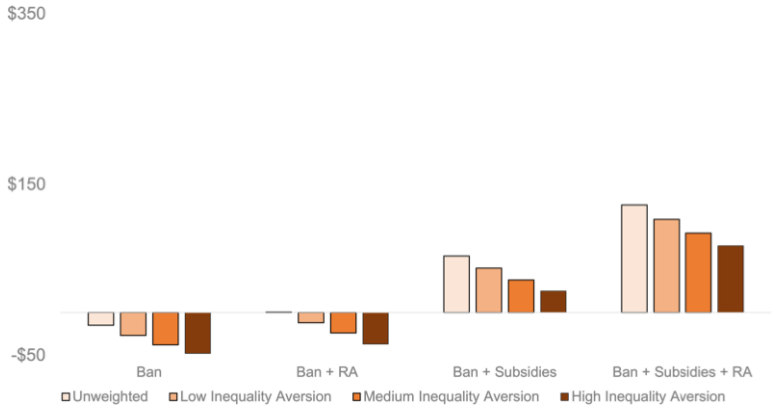
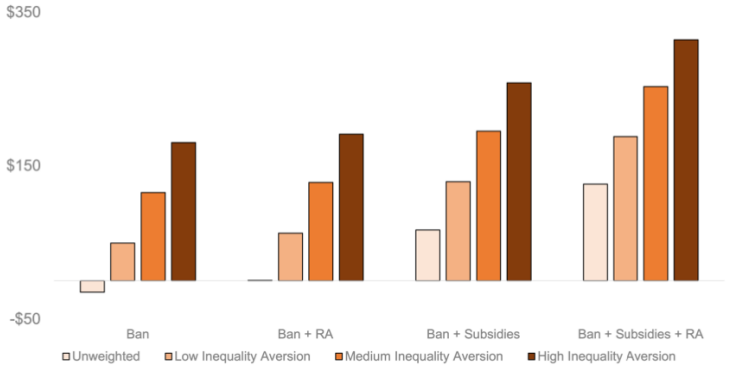
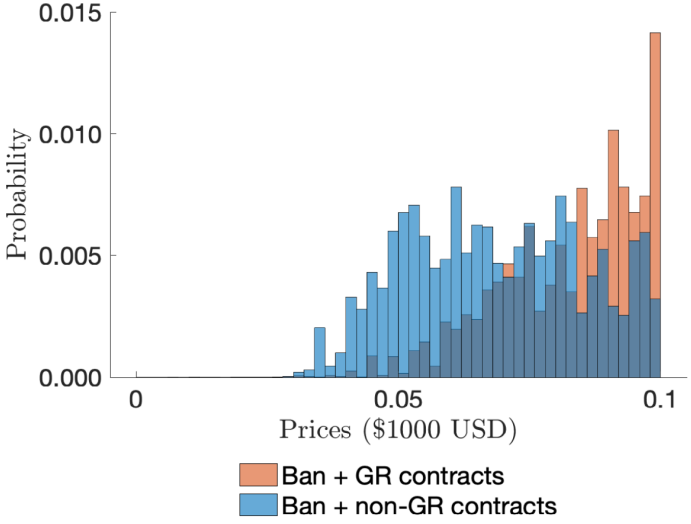


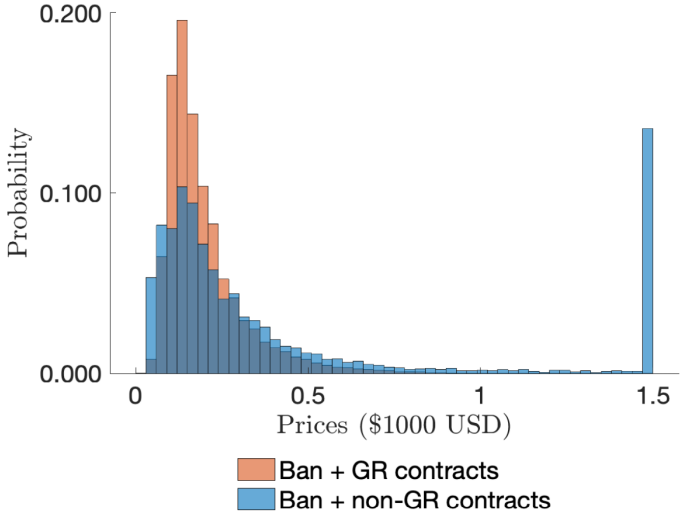
Figure 12: Consumer surplus impact and health spending inequality aversion



Short-Term Contracts Perform Better Under Ban

Left: distribution of "cheap" plans; Right: distribution of all plans.





- More consumers enter the private market under non-GRCs as low-quality plans do not need to cross-subsidize high-quality plans.
- Consumers are overall better off with a ban under with short-term contracts since cheaper plans enter into consumer choice sets.

Implications for U.S. Health Insurance Policy?

- Health insurance GRCs are only currently used in Chile and Germany, but discussion of applications in the U.S. is ongoing.
- Given well-founded concerns over balancing gender-equity and income-equality in the U.S., understanding how surplus changes in response to various pricing policies under different available insurance systems is important.