Discussion of Li and Zheng (2025): Experience Rating and Moral Hazard in Insurance Markets

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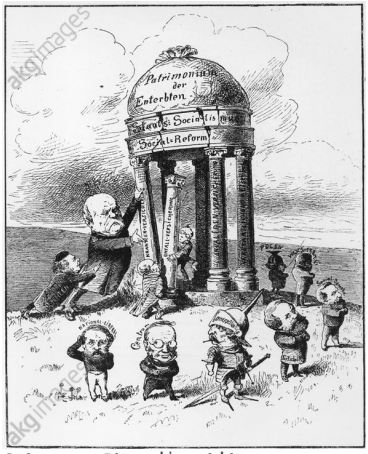
Experience Rating

Old idea but still prevalent.



Caricature on Bismarck's social insurance program. The True Jacob, No. 1, Stuttgart, January 1884.

- One of the first use cases is Bismarck's social insurance system in Germany in 1880s.
  - The industrial accident insurance featured coarse experience rating for member firms primarily as a "means to reduce accidents." (Guinnane and Streb, 2015)
  - Member firms were partially experience-rated: firms were put into discrete risk classes based on observables, and accident records were pooled across firms in each risk class.

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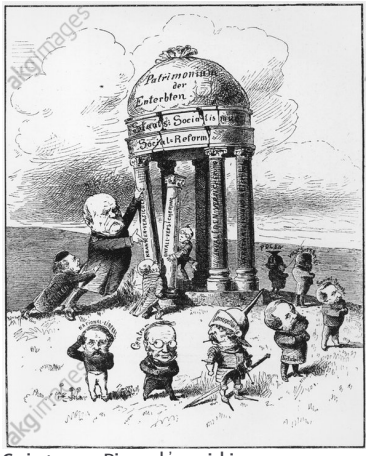

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  - Member firms were partially experience-rated: firms were put into discrete risk classes based on observables, and accident records were pooled across firms in each risk class.
- Modern experience-rating is ubiquitous in auto insurance globally, often as regulated Bonus-Malus systems
  - claim rate reduced after insured consumers experienced claims and faced higher premiums (Abbring et. al., 2003a, 2003b, 2008; Dionne et. al., 2013; Jeziorski et. al., 2017)

Paper Summary

Strategy

- micro panel dataset (5% of all) Chinese auto insurance policies
- DID using reform that changed experience rating (and de-regulated insurer pricing)
- a sufficient stats approach: welfare benefit = accident reduction

Key institutional differences vs. U.S.

- significantly higher adoption of voluntary coverage ($\sim$100% chose higher liability limits than mandatory minimum; $\sim$80% chose comprehensive coverage)
- significantly higher claim rates ($\sim$2X liability and $\sim$4X comprehensive)
- almost fully regulated and uniform pricing pre-reform

Results

- Claim rate reduced, esp. small comprehensive claims ($\sim$50%!) $\rightarrow$ utilization dropped
- Liability claims also reduced by $\sim$800K $\rightarrow$ accident prevented and welfare increased

Comment 1: Evidence on Ex-ante MH / Accident Reduction is Weaker

Key Evidence and Argument

1. "large-"sized comprehensive claims have reduced post reform.

but large = above 75th percentile, but in pareto-like claim distributions $\approx$ mean: can we really assume away the reporting decision here?

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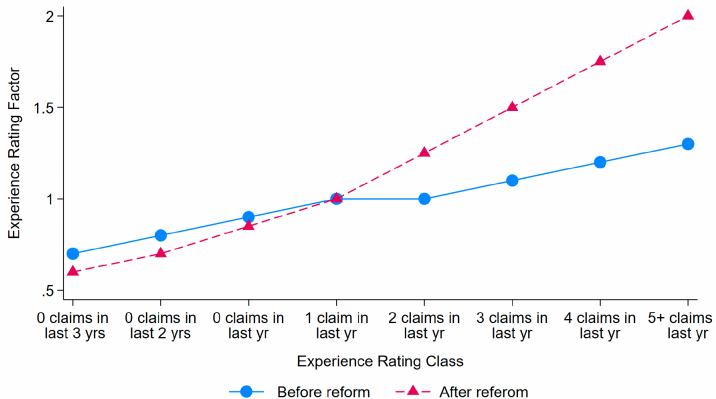
Solutions

- Focus on ex-post moral hazard and utilization
  - no welfare increase can be a strong(er) result
  - avoid additional issues on needing to model injury/congestion externalities, etc.
  - a lot to dig on the design of experience rating...

The Experience Rating Change

Figure 1: Experience Rating Factor Changes Before and After Reform



(a) Experience Rating Factor

The Experience Rating Change

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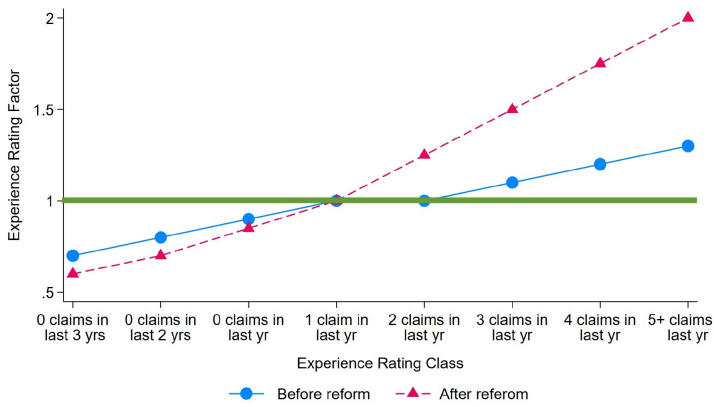

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- Pre-reform
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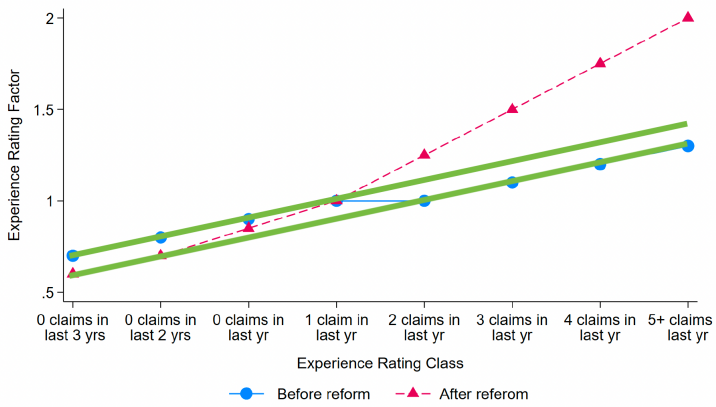

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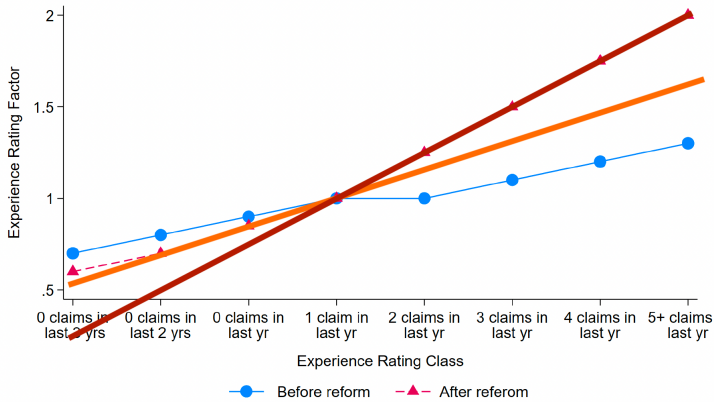

(a) Experience Rating Factor

- Pre-reform
  - no penalty for the second claim (forgiveness)
  - 10% per claim or per year without claim
- Post-reform
  - 25% per claim
  - 10-15% per year without claim

- Why is there an asymmetry where claim surcharge $>$ no-claim discount?
  - 1 year of zero claim $=$ 10-15% discount; 1 claim $=$ 15-25% surcharge
  - Same ability to curb moral hazard

Comment 2: Selection Should be Modeled

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Experience rating as a risk rating tool

- Consumers' differ in accident risk; firms risk rate to prevent adverse selection, including past accident records
  - Suppose Accident $\sim Pois(\lambda)$, where our prior for $\lambda \sim Beta(1, 9)$ (mean of 0.1)
  - Posterior mean of λ after N claims in a period is $\frac{1+N}{10}$
  - Posterior mean of λ after 0 claim for T periods is $\frac{1}{10+T}$

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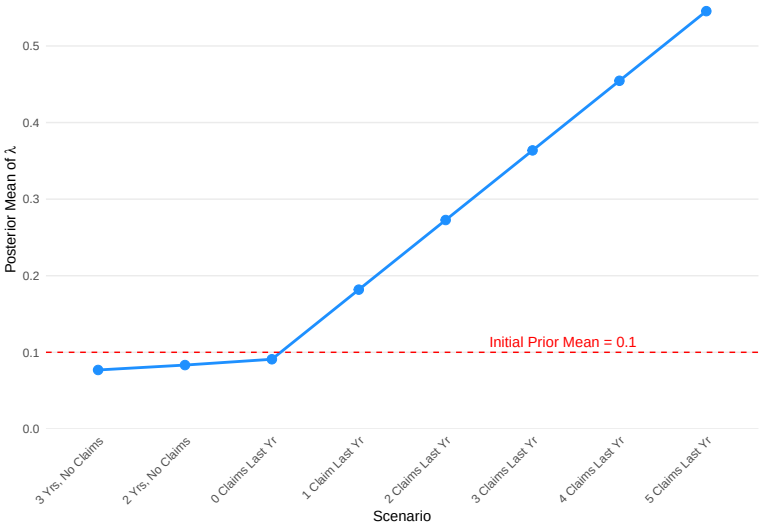

- Experience rating can identify the very high private-risk drivers, which can effectively limit adverse selection as private risk is typically log-normally distributed
- Much harder to distinguish among safe drivers

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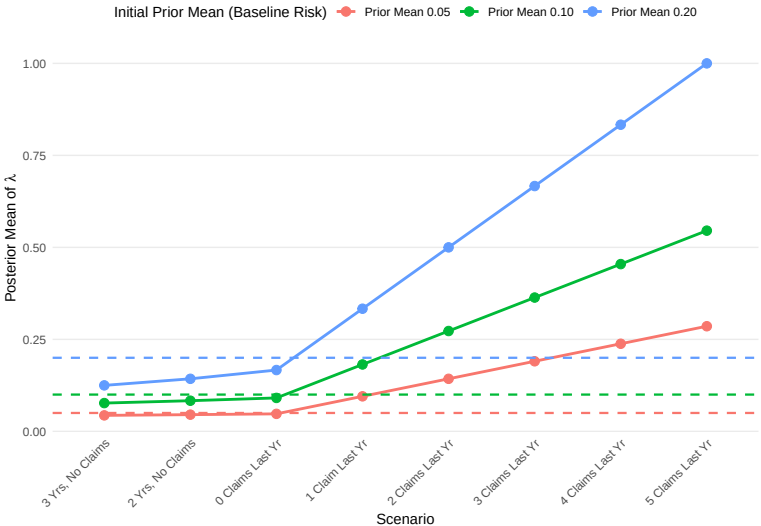

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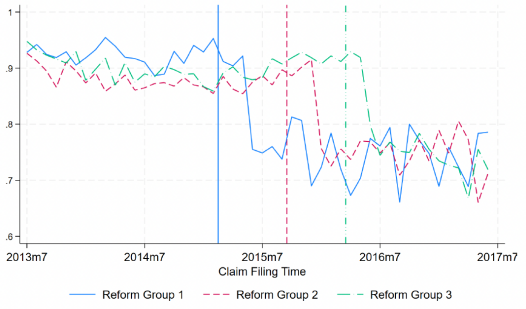
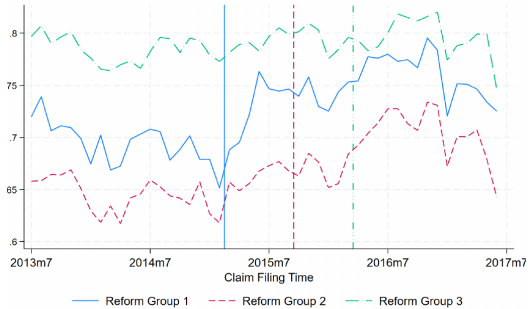
Clear evidence of reduced adverse selection: % Purchasing Comprehensive Plan drops among riskier segments



(a) 3 Claims Last Year



(d) No Claims Last 2 Year

Comment 2: Selection Should be Modeled

Solutions

- Borrow from existing models to decompose risk heterogeneity vs. moral hazard:
  - cost to achieve risk $\lambda = \text{constant} + \frac{\theta_{\mathbf{1},i}}{\mathbf{1}+\theta_{\mathbf{2},i}\lambda}$ (Jeziorski et al., 2018)
  - $\lambda_{it} = \beta X_{it} \times \text{plan}_{it} + \epsilon_i$ (Jin and Vasserman, 2019 / Cosconati et al. 2024)
  - selection on moral hazard: utility from claiming amount $m = (m - \lambda) - \frac{1}{2\omega_i} \cdot (m - \lambda)$, where λ is the monetized health shock (Einav et al. 2013)
- Model coverage choice and selection
  - static: allocative efficiency from reduced adverse selection
  - dynamics: increased reclassification risk (HHW 2015)

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Or focus on other outcomes that does not necessarily require teasing out MH vs. adverse selection, such as firms' baseline pricing responses...

Comment 3: Supply side response

The assumption of perfect competition seems...

- unnecessary:
  - premium change due to the deregulation reform is observed for every risk class
  - no more sufficient stats once coverage choice / selection is incorporated
- hard to defend:
  - even base premium $\gg$ average claim cost
  - firm-level price heterogeneity is significant (+/- 5 percentage points)

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Rare opportunity to study systematic privatization of insurer pricing

Going beyond the JMP

A very high-potential setting

1. Optimal design of experience rating
   - ▷ decompose information (allocative/dynamic reclassification) vs. incentive (ex-post moral hazard) effects
   - ▷ need to estimate structural model, but can unlock important counterfactuals
     - ∗ optimal discount/surcharge given distributional preferences (e.g. risky drivers also poorer)
     - ∗ optimal forgiveness or lookback period given reclassification risk (HHW 2015)
2. Supply side response
   - ▷ estimate multi-dimensional differentiation: loading cost, claim processing cost, branding, information precision (Cosconati et. al. 2025)
   - ▷ behavioral IO: pricing heuristics, experimentation, etc. (Rubinstein 2025)
   - ▷ profit-max experience-rate within regulatory limits? (U.S. model)