Information Frictions and Adverse Selection: Policy Interventions in Health Insurance Markets

Ben Handel\textsuperscript{1}  Jonathan Kolstad\textsuperscript{2}  Johannes Spinnewijn \textsuperscript{3}

UC Berkeley & NBER
Wharton & NBER
LSE & CEPR

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Motivation: Policy Interventions in Insurance Markets

- Policies to improve consumer decisions given market offerings:
  - Much evidence of choice frictions and consumer losses
  - Information provision / improved shopping experiences
  - Different default options, including smart defaults

- Policies have ambiguous welfare impacts:
  - **Improved Matching**: Better match of consumers to offered plans
  - **Adverse Selection**: Selection on risks leads to *under-insurance*

- Policies to combat adverse selection:
  - **Insurer Risk-Adjustment Transfers**: Transfers for enrolling sicker consumers vs. healthier consumers (ex ante or ex post)
  - Risk-rating, product regulation, targeted subsidies
This Paper

- **Part 1:** Develop model / framework to characterize policy impacts based on key ‘sufficient’ micro-foundations
  - Demand for incremental insurance
  - Welfare-relevant value for incremental insurance
  - Frictions (wedge between first two objects)
  - Insurer costs of incremental coverage

- **Part 2:** Use model to develop positive and normative comparative statics for policies with respect to key micro-foundations
  - What do distributional characteristics of micro-foundations imply for (i) friction-reducing policies (ii) risk-adjustment policies (iii) policy interactions
  - Simulations to help illustrate results

Closely Related Work

- Prior work on adverse selection and choice frictions in insurance:
  - Theory: Spinnewijn (2014)

- Empirical work on choice frictions and welfare:
  - Other: Bronnenberg et al. (2015), Alcott and Taubinsky (2015)

- Prior empirical work on adverse selection in health insurance:
  - Bundorf et al. (2012)
  - Cutler and Reber (1998)
  - Many more.....
Outline

- Model
- Simulations
- Empirical setting [HK (2015)] and Calibration
- Counterfactual Market / Policy Analysis
Demand for insurance plan depends on heterogeneity in willingness-to-pay.

Information frictions can lead to a difference between demand and welfare-relevant valuation.
Inefficient Selection (2): Health Expenses

- Expected expenses determine both wtp and cost to insurer. Positive correlation induces adverse selection.
- Welfare surplus depends on *marginal* cost. Competitive pricing depends on *average* cost.

![Graph showing demand, average cost, and marginal cost with price and quantity axes.](image)
Setup

- Insurance market with basic public option and competitively provided supplemental coverage [Einav et al. (2010)]
  - Alternative analysis with Handel et al. (2015)

- Willingness-to-pay depends on true value and friction value

\[ w_i = s_i + c_i + f_i = v_i + f_i \]

- Expected expenses \( c \) determine cost of providing the plan, but also affect the value

- Heterogeneity in 3 ‘observable’ dimensions (\( w, f \) and \( c \));
  
  Buy if \( w \geq p \). Efficient to buy if \( v - c \geq 0 \).

- Discuss: no moral hazard / price elasticity
Equilibrium and Ordering

- Competitive equilibrium at \( P^c = E_{\geq P^c}(c) \) with corresponding equilibrium coverage \( Q^c \)

- Welfare depends on level and type of consumers purchasing:

\[
\mathcal{W}(Q, \mathcal{O}) = \int_{\tilde{P} \geq P^c} E_{\tilde{P}}(s)dG(\tilde{P}) = 1 - G(P) \times E_{\geq P}(s)
\]

- Here, \( \mathcal{O} \) is ordering of WTP in equilibrium

- For given ordering, marginal surplus is \( E_P(s) = E_P(v) - E_P(c) \)

- Constrained efficient outcome w/ \( \mathcal{O} \) vs. unconstrained efficient
Equilibrium and Ordering

The diagram illustrates the relationship between price ($P$), quantity ($Q$), and various economic concepts such as Demand, Value, AC (Averages Costs), and MC (Marginal Costs). The points $P_H$, $P_c$, and $P_L$ represent different price levels, with corresponding quantities $Q_H$, $Q_c$, and $Q_L$. The diagram shows how changes in price affect the equilibrium quantity and the relationship between demand and costs.
Welfare: Level vs. Sorting

- Level effect vs. sorting of policy intervention $x$:

$$W'(x) = \frac{\partial \tilde{W}(Q(x), O(x))}{\partial Q} Q'(x) + \frac{\partial \tilde{W}(Q(x), O(x))}{\partial O} O'(x).$$

- With no frictions, only first term matters for welfare analysis
- With frictions, resorting of consumers matters
- Results for mean frictions at equilibrium:

<table>
<thead>
<tr>
<th>Welfare Effect of Quantity Increase</th>
<th>$E_P(x) (f) &gt; 0$</th>
<th>$E_P(x) (f) &lt; 0$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Competitive Equilibrium</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adverse selection</td>
<td>$\frac{\partial W}{\partial Q} \geq 0$</td>
<td>$\frac{\partial W}{\partial Q} &gt; 0$</td>
</tr>
<tr>
<td>Advantageous selection</td>
<td>$\frac{\partial W}{\partial Q} &lt; 0$</td>
<td>$\frac{\partial W}{\partial Q} \geq 0$</td>
</tr>
</tbody>
</table>
Demand side policy: Reduced Frictions

- Friction-reducing policies:
  - Interventions designed to reduce consumer choice frictions
  - E.g., product standardization, decision aides, defaults

- Policy effectiveness characterized by $\alpha \in [0, 1]$:

$$\tilde{w} = w - \alpha \times f$$

- $\alpha$ is simple way to think about impact of friction-reducing policies on choices
Reduced Frictions - Level vs. Sorting

- **Level effect**: Occurs if mean marginal frictions positive or negative

  Maintains ordering, similar to if subsidy provided

  \[
  \frac{\partial \tilde{Q}(\alpha, O(\alpha))}{\partial \alpha} = -E_{Pc}(f) \times \eta^c.
  \]

- **Sorting Effect**: Depends on:

  \[
  cov_P(v, f) = cov_P(P - (1 - \alpha)f, f) = -(1 - \alpha) var_P(f) \leq 0
  \]

  The larger is \(\sigma_f\), the more a friction-reducing policy increases sorting based on true value.
Sorting Effect Graphically

- Expected frictions contribute directly to WTP when present
- Mitigate sorting on costs
Sorting Effect Graphically

- Rotation of WTP to value curve
- High friction consumers have $w$ go down, low friction consumers have $w$ up
Reduced Frictions - Costs and Re-Sorting

- So, resorting occurs both on costs and frictions, impact on welfare depends on which effect dominates

**Proposition 2:** The impact of an information policy \( \alpha \) on the equilibrium coverage \( Q^c(\alpha) \) in a competitive market with equilibrium price \( P^c(\alpha) \) equals

\[
\frac{dQ^c}{d\alpha} = -\eta^c \times \left[ E_{P^c}(f) - \text{cov}_{P^c}(c, f) \frac{|\varepsilon_D(P^c)|}{P^c} \right].
\]

**Proposition 3** The impact of an information policy on equilibrium welfare equals

\[
\frac{d\mathcal{W}}{d\alpha} = E_{P(\alpha)}(s) Q'(\alpha) - \text{cov}_{P(\alpha)}(s, f) g^{\tilde{w}(\alpha)}(P(\alpha)).
\]
Reduced Frictions - Costs and Re-Sorting

**Corollary 1** In an equilibrium with under-insurance, $E_{Pc}(s) > 0$, the welfare gain from reducing information frictions increases in $-cov_{Pc}(s, f)$, but decreases in $-cov_{Pc}(c, f)$ and in $E_{Pc}(f)$.

- With resorting, clear that demand, value and cost curves not sufficient for studying policy interventions
- Importantly:
  \[
  cov_w(c, f) = \frac{1}{2} [var_w(s) - var_w(c) - var_w(f)]
  \]
  \[
  cov_w(s, f) = \frac{1}{2} [var_w(c) - var_w(s) - var_w(f)].
  \]

Insurer Risk-Adjustment: Level Effect and Selection

- Insurer risk-adjustment transfers:
  - ‘reverse’ adverse selection by arranging transfers from insurers enrolling sick consumers to those enrolling healthy

- Policy effectiveness characterized by $\beta \in [0, 1]$,
  \[ \tilde{c}_i(\beta) = c_i - \beta \times (c_i - E(c)) \]

- Transfers don’t resort consumers, have level effect in our setup

- Prices reduced, quantities increased when adversely selected market

- In adversely selected market, when frictions favor more insurance, risk-adjustment policies and friction-reducing policies are complementary
Outline

- Model
- Simulations
- Empirical setting [HK (2015)] and Calibration
- Counterfactual Market / Policy Analysis
Simulations

- Simulations intended to further draw out implications of model primitives for impact of (i) friction-reducing policies and (ii) risk-adjustment transfers

- Market in spirit of Einav et al. (2010), basic coverage with 66% AV, supplemental coverage purchased in market brings this to 100%

### Key Micro-Foundations

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Costs - $\mu_c$</td>
<td>5,373</td>
</tr>
<tr>
<td>Total Costs - $\sigma_c$ - High</td>
<td>6,819</td>
</tr>
<tr>
<td>Total Costs - $\sigma_c$ - Low</td>
<td>2,990</td>
</tr>
<tr>
<td>Frictions - $\mu_f$ - High</td>
<td>2,500</td>
</tr>
<tr>
<td>Frictions - $\mu_f$ - Low</td>
<td>0</td>
</tr>
<tr>
<td>Frictions - $\sigma_f$ - High</td>
<td>2,000</td>
</tr>
<tr>
<td>Frictions - $\sigma_f$ - Low</td>
<td>500</td>
</tr>
<tr>
<td>Risk Aversion - $\mu_s$ - High</td>
<td>$1 \times 10^{-3}$</td>
</tr>
<tr>
<td>Risk Aversion - $\mu_s$ - Low</td>
<td>$3 \times 10^{-4}$</td>
</tr>
<tr>
<td>Risk Aversion - $\sigma_s$ - High</td>
<td>$4 \times 10^{-4}$</td>
</tr>
<tr>
<td>Risk Aversion - $\sigma_s$ - Low</td>
<td>$1 \times 10^{-4}$</td>
</tr>
</tbody>
</table>

*Costs simulated from lognormal distribution.

**Frictions Simulated from normal distribution.

***Risk preferences simulated from normal distribution, truncated above 0.
Distribution of Costs / Insurance Surplus

- High Variance Costs
- Low Variance Costs

- High Mean, High Variance Risk Protection
- Low Mean, High Variance Risk Protection
- Low Mean, Low Variance Risk Protection
Example 1: Low $\mu_s$ vs. High $\mu_s$

- Other micro-foundations: high $\sigma_s$, low $\mu_f$, high $\sigma_f$, high $\sigma_c$
- $\sigma_f$ high swamps $c$ and $s$ with no policy intervention
- Reducing frictions by 50% (100%) causes market to unravel, due to low $\mu_s$, Mkt. Share declines from .51 to .41 to .11.
Example 1: Low $\mu_s$ vs. High $\mu_s$

- With high $\mu_s$, reducing frictions improves match quality but does not markedly increases selection.

- Full friction market share is 0.64: reducing frictions by 50% (100%) increases this share to .79 (.91)

- Marginal consumers biased against coverage w/ high $\mu_s$
Reducing mean frictions $\mu_f$ unambiguously decreases mkt. share of incremental coverage, as expected.

<table>
<thead>
<tr>
<th>Simulations</th>
<th>Equilibrium Surplus</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Low $\sigma_c$</td>
</tr>
<tr>
<td></td>
<td>Low $\mu_s$</td>
</tr>
<tr>
<td></td>
<td>Low $\sigma_s$</td>
</tr>
<tr>
<td>High $\mu_f$, High $\sigma_f$</td>
<td>0.94</td>
</tr>
<tr>
<td>High $\mu_f$, Low $\sigma_f$</td>
<td>1</td>
</tr>
<tr>
<td>Low $\mu_f$, High $\sigma_f$</td>
<td>0.62</td>
</tr>
<tr>
<td>Low $\mu_f$, Low $\sigma_f$</td>
<td>0.72</td>
</tr>
<tr>
<td>No Frictions</td>
<td>0.56</td>
</tr>
<tr>
<td>High $\sigma_c$</td>
<td>0.90</td>
</tr>
<tr>
<td>Low $\mu_s$</td>
<td>0.94</td>
</tr>
<tr>
<td>High $\sigma_s$</td>
<td>0.95</td>
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<tr>
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<td>1</td>
</tr>
<tr>
<td>High $\sigma_s$</td>
<td>1</td>
</tr>
<tr>
<td>High $\sigma_c$</td>
<td>0.61</td>
</tr>
<tr>
<td>High $\mu_s$</td>
<td>0.67</td>
</tr>
<tr>
<td>High $\sigma_s$</td>
<td>0.84</td>
</tr>
<tr>
<td>High $\sigma_c$</td>
<td>0.33</td>
</tr>
<tr>
<td>High $\mu_s$</td>
<td>0.84</td>
</tr>
<tr>
<td>High $\sigma_s$</td>
<td>0.23</td>
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<tr>
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<td>0.95</td>
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Simulations: Broader Patterns

- Following Proposition 2, welfare implications of reducing $\sigma_f$ depend on $\sigma_c$. Low $\sigma_c$ complementary to friction reduction policies.
- Results in paper on 50% friction reduction as well

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Simulations: Broader Patterns

- Mean and variance of underlying surplus crucial for determining whether frictions good or bad for market function.

- When $\sigma_f$ reduced, bad for welfare with low $\mu_s$ and $\sigma_s$ relative to $\sigma_c$, but converse is true when $\mu_s$ and $\sigma_s$ high relative to $c$.

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<tr>
<td>No Frictions</td>
<td>0.56</td>
</tr>
</tbody>
</table>
Risk-Adjustment

Risk-adjustment complementary to friction-reducing policies: the more effective risk-adjustment is when implemented, the more likely friction-reducing policies will be welfare enhancing.

Handel, Kolstad, Spinnewijn
Handel et al. (2015) exchange equilibrium with two priced plans

- For given micro-foundations, market more likely to unravel because more generous coverage internalizes full costs (rather than supplemental costs), relevant equilibrium object $\Delta P = \Delta AC$
- Comparitive statics the same, key difference is friction-reducing policies more likely to be welfare reducing in general
- See Weyl and Veiga (2015) for more detail

- Proportion of successfully matched consumers given equilibrium prices

- Range of additional policy scenarios / comparative statics
Outline

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- Empirical setting [HK (2015)] and Calibration
- Counterfactual Market / Policy Analysis
Empirical Application: Health Insurance

- Use estimates from Handel and Kolstad (2015) to calibrate a competitive insurance market where insurers can offer two types of health plans:
  - Preferred Provider Organization plan ($\approx 100\%AV$)
  - High Deductible Health Plan ($\approx 75\%AV$)

- Detailed administrative data for large firm with approx. 55,000 US employees covering 120,000 lives
  - Data on health plan choice
  - Detailed claims data / risk metrics
  - AND individually-linked survey data on consumer information
Plan Design
Individual Ex-Post Break Even

- Comprehensive plan, PPO, zero ex post cost sharing
- Other plan high-deductible plan, positive cost sharing paired with HSA that yields some financial benefits
- Same providers and services

Value of HDHP vs. PPO: Family Tier

- HDHP Subsidy
- Break Even

Total Medical Expenditures

Relative HDHP Value

Handel, Kolstad, Spinnewijn
Information and Selection
Data and Descriptives (in short)

- Survey offered randomly to 4500 consumers (1661 respondents)
  - Limited selection on demos., reweighting for empirical work

- Multiple choice questions target:
  - Information about plan financial characteristics
  - Information about own health risk
  - Information about provider networks
  - Perceived ex post time and hassle costs, tastes

- 60% should choose *HDHP* simple risk-neutral model, 15% actually do. Gap rationalized by:
  - Risk preferences
  - Information frictions
### Sample Descriptives

#### Low Sample Selection

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Full Sample</th>
<th>Survey Rec. Resampled</th>
<th>Survey Res. Resampled</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Actual</td>
<td>41,361</td>
<td>4500</td>
<td>1661</td>
</tr>
<tr>
<td>N-Resampled</td>
<td>-</td>
<td>18000</td>
<td>6260</td>
</tr>
</tbody>
</table>

#### Demographics

- % Male: 76.4, 76.8, 75.6
- % < 39: 49.7, 58.7, 54.3
- % < 125,000 Income: 48.1, 54.2, 54.1
- % No Family: 23.0, 29.0, 20.9
- 2011 PPO%: 88.8, 89.6, 88.7
- 2012 PPO%: 82.7, 83.0, 81.6

#### Family Spending:

- Mean: $10,191, $8,820, $11,247
- Median: $4,275, $3,363, $4,305
- 25th: $1,214, $878, $1,176
- 75th: $10,948, $9,388, $11,555
- 95th: $35,139, $32,171, $41,864
Example
Provider Network Knowledge

- In our environment choice between two plans:
  - Plan 1: Financially comprehensive
  - Plan 2: High-deductible health plan
  - *Exact same provider network / treatments*

- **Hypothesis:** Many people think the financially comprehensive plan has better doctors/treatments

- **Survey evidence:**
  - *Less than 50%* of people in each plan know that medical care access is identical
  - Many are ‘not sure,’ 20% in line with hypothesis

- Structural analysis shows that those who answer more providers give up $2,362 on average
Plan Choice Shares
Function of Survey Answers

Under which plan is your provider network larger?

<table>
<thead>
<tr>
<th>2012 Choices</th>
<th>Share of HSP</th>
<th>Share of PPO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same</td>
<td>22.88</td>
<td>77.14</td>
</tr>
<tr>
<td>PPO</td>
<td>5.626</td>
<td>94.37</td>
</tr>
<tr>
<td>HSP</td>
<td>12.16</td>
<td>87.84</td>
</tr>
<tr>
<td>Not sure</td>
<td>17.38</td>
<td>82.62</td>
</tr>
<tr>
<td>2011 Breakeven, %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Same</td>
<td>33.16</td>
<td>66.84</td>
</tr>
<tr>
<td>PPO</td>
<td>39.75</td>
<td>60.25</td>
</tr>
<tr>
<td>HSP</td>
<td>23.99</td>
<td>76.01</td>
</tr>
<tr>
<td>Not sure</td>
<td>39.21</td>
<td>60.79</td>
</tr>
</tbody>
</table>
Summary of Information

Types Histogram
Empirical Model w/ Frictions [HK (2015)]

- Estimate random utility model with non-structural friction dummies $Z_f$ representing $\$ effect of frictions for HDHP

- Consumer $k$ choose plan from $J = \{HDHP, PPO\}$ that maximizes expected utility:

$$\max_{j \in J} U_{kjt} = \int_0^\infty u_k(m_j, OOP)f_{kjt}(OOP)dOOP$$

$$u_k(m_j, OOP) = -\frac{1}{\gamma_k(X_k^A)} e^{-\gamma_k(X_k^A)(m_j - OOP)}$$

$$m_j = W_{kt} - P_{kjt} + \eta(X_k^B)1_{jt=j_{t-1}} + \sum_{f=1}^{F} \beta_f Z_f \ast I_{HDHP} + \epsilon_{kjt}$$
Identification

- For fully informed consumer with no hassle costs, model reduces to typical expected utility model
- Coefficients $\beta$ shift utility of uninformed consumer relative to similar, but informed, consumer
- **Assumption:** Classical risk preferences $\gamma$ (conditional on demographics) orthogonal to $Z$
  - Potential violation in either direction
  - Information acquisition and $\gamma$
  - $\gamma$ and sophistication, information acquisition
  - If $\gamma$ negatively correlated with $Z$, then $\beta$ is lower bound
- Simple arguments for identification given assumption
- Types model and correlations between index and $\gamma$
- Classical risk vs. risk from lack of information
## Choice Model Estimates

<table>
<thead>
<tr>
<th>Model Estimates</th>
<th>Estimate</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average $\mu_\gamma$</td>
<td>$8.6 \cdot 10^{-5}$</td>
<td>$[8.19 \cdot 10^{-5}, 2.23 \cdot 10^{-4}]$</td>
</tr>
<tr>
<td>Std. Dev. $\mu_\gamma$</td>
<td>$1.4 \cdot 10^{-5}$</td>
<td>$[9.41 \cdot 10^{-6}, 4.41 \cdot 10^{-5}]$</td>
</tr>
<tr>
<td>Gamble Interp. Avg. $\mu_\gamma$</td>
<td>920.47</td>
<td>$[822.51, 924.23]$</td>
</tr>
</tbody>
</table>

### Benefits knowledge: Avg. $\mu_\gamma$

- Any incorrect: 98.04 [ -614.70, 377.52 ]
- Any ‘not sure’: -467.48 [ -1670.66, 127.94 ]

### Time cost hrs. X prefs:

- Time cost hrs.: -9.72 [ -90.07, 118.86 ]
- ... X Accept, concerned: -118.15 [ -282.81, -55.79 ]
- ... X Dislike: -128.98 [ -293.99, -70.02 ]

### Provider networks:

- HDHP network bigger: -594.38 [ -1842.45, 562.52 ]
- PPO network bigger: -2362.85 [ -3957.68, -1286.62 ]
- Not sure: -201.81 [ -937.44, 303.21 ]

### TME guess:

- Overestimate: 62.98 [ -810.72, 704.28 ]
- Underestimate: -208.30 [ -1154.63, 837.19 ]
- Not sure: -688.91 [ -1987.28, 320.99 ]

### Average Survey Effect

<table>
<thead>
<tr>
<th>Estimate</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1787.40</td>
<td>[-2148.63, -906.96]</td>
</tr>
<tr>
<td>1303.64</td>
<td>[1264.29, 2329.12]</td>
</tr>
</tbody>
</table>
Families: Density of Friction Values for HDHP

Tier 3, density of frictions

Density

Frictions
Families: Density of Expected Costs
Families: Density of Insurance Surplus
Families: Density of Willingness-to-Pay

- Handel, Kolstad, Spinnewijn
Calibrate Insurance Model

- For each individual \( k \) and plan \( j \) estimate \( \hat{U}_{kj}(\alpha) \) with

\[
\hat{m}_{kj}(\alpha) = W_k - P_{kj} + \eta(X_k^B)1_{jt=j_{t-1}} + (1 - \alpha) * Z_k' \hat{\beta} * I_{HDHP} + \hat{\epsilon}_{kj}
\]

- Construct variables for additional coverage provided by PPO relative to HDHP:

\[
\begin{align*}
  w_k &= \hat{CE}_{k,PPO} - \hat{CE}_{k,HDHP}(\alpha = 0) \\
  v_k &= \hat{CE}_{k,PPO} - \hat{CE}_{k,HDHP}(\alpha = 1) \\
  c_k &= \text{coverage}_{k,PPO} - \text{coverage}_{k,HDHP}
\end{align*}
\]

- Information frictions are assumed to be welfare-irrelevant:

\[
\hat{f}_k = -Z_k' \hat{\beta}
\]
Outline

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- Simulations
- Empirical setting [HK (2015)] and Calibration
- Counterfactual Market / Policy Analysis
Baseline Case: No Intervention

- **PPO** Mkt Share $\approx 84\%$. Fairly low risk preference estimates lead to small, but positive surplus from buying **PPO**.
Policy Analysis

This market

1. Surplus is small and homogeneous (results would be different with typical large RP estimates)
2. Large positive friction value and quite heterogeneous
3. Costs are heterogeneous, much larger variance than surplus

Examine impact of policy interventions

1. reduce information frictions by some proportion $\alpha \in [0, 1]$
2. introduce risk-adjustment by some proportion $\beta \in [0, 1]$
Partially Reduced Information Frictions

$\alpha = 0.5$, $\beta = 0$

- *PPO* Mkt Share drops to $\approx 72\%$. Some incremental adverse selection.
Fully Reduced Information Frictions

$\alpha = 1, \beta = 0$

- Market essentially unravels (very low PPO market share). Demand shifts in and scope for adverse selection increases.
As frictions are reduced the cost curves become steeper.
Impact of Risk-Adjustment Transfers

Insurer AC curves $\alpha = \{0, 1\}$, $\beta \in \{0, .5, 1\}$

- Full insurer risk-adjustment transfers ($\beta = 1$) increase PPO mkt. share from 84% to 90% with frictions, from 0% to $\approx 65\%$ with no frictions
Premiums
Function of $\alpha$ (friction-reduction) and $\beta$ (risk-adjustment)

- Premiums increasing in $\alpha$, decreasing in $\beta$
- Biggest impact of risk-adjustment at high values of $\alpha$
Market Share PPO
Function of $\alpha$ (friction-reduction) and $\beta$ (risk-adjustment)

- Coverage decreasing in $\alpha$, increasing in $\beta$
Welfare

Function of $\alpha$ (friction-reduction) and $\beta$ (risk-adjustment)

- Decrease in coverage level translates into lower welfare
- Improved sorting on surplus for high $\alpha$ has limited welfare effect
Conclusion

- Policies to reduce choice frictions have subtle implications in selection markets

- We develop framework with key ‘sufficient’ micro-foundations to analyze (i) friction-reducing policies and (ii) risk-adjustment transfers

- Allows us to investigate when such policies will be welfare-increasing vs. welfare-reducing, and develop comparative statics with respect to key foundations

- Empirical implementation, with estimates of micro-foundations, illustrates how framework can be applied

- Important for market designers / regulators thinking about policies to improve consumer choices in insurance markets (essentially all regulators)