Weeks 5 & 6: Insurance Markets

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February 16, 2022

Roadmap

- Market equilibrium and adverse selection
- Contract regulation in exchanges
- Inertia and adverse selection: case study
- Choice frictions and market equilibrium
- Some next steps in literature

Einav et al., *QJE*, 2010

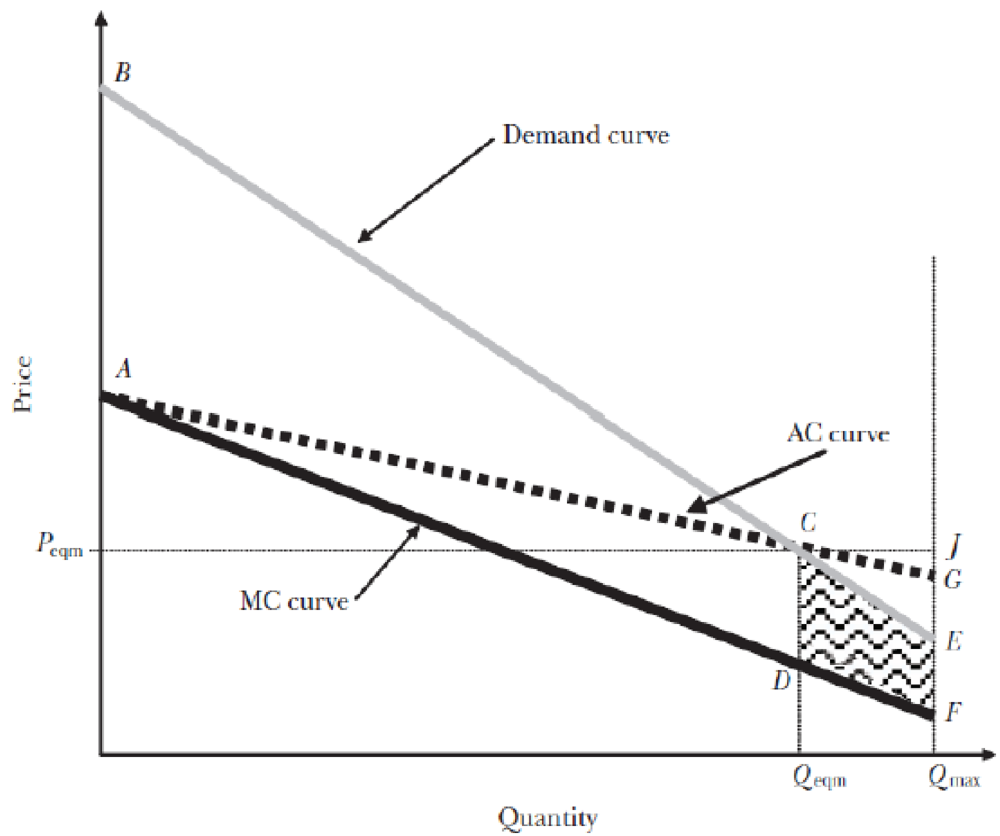
"Estimating Welfare in Insurance Markets Using Variation in Prices"

EFC (2010): Setup

- Simple model of selection markets, nice graphical framework
- Application to adverse selection in health insurance at large employer (Alcoa) where different regions / offices have different prices, ostensibly because of idiosyncratic management by site
- Model assumes that one plan is priced by competitive market and that other option is non-priced backstop option (e.g. basic government insurance).
- Main empirical result: some evidence of adverse selection, but very small welfare loss from that selection

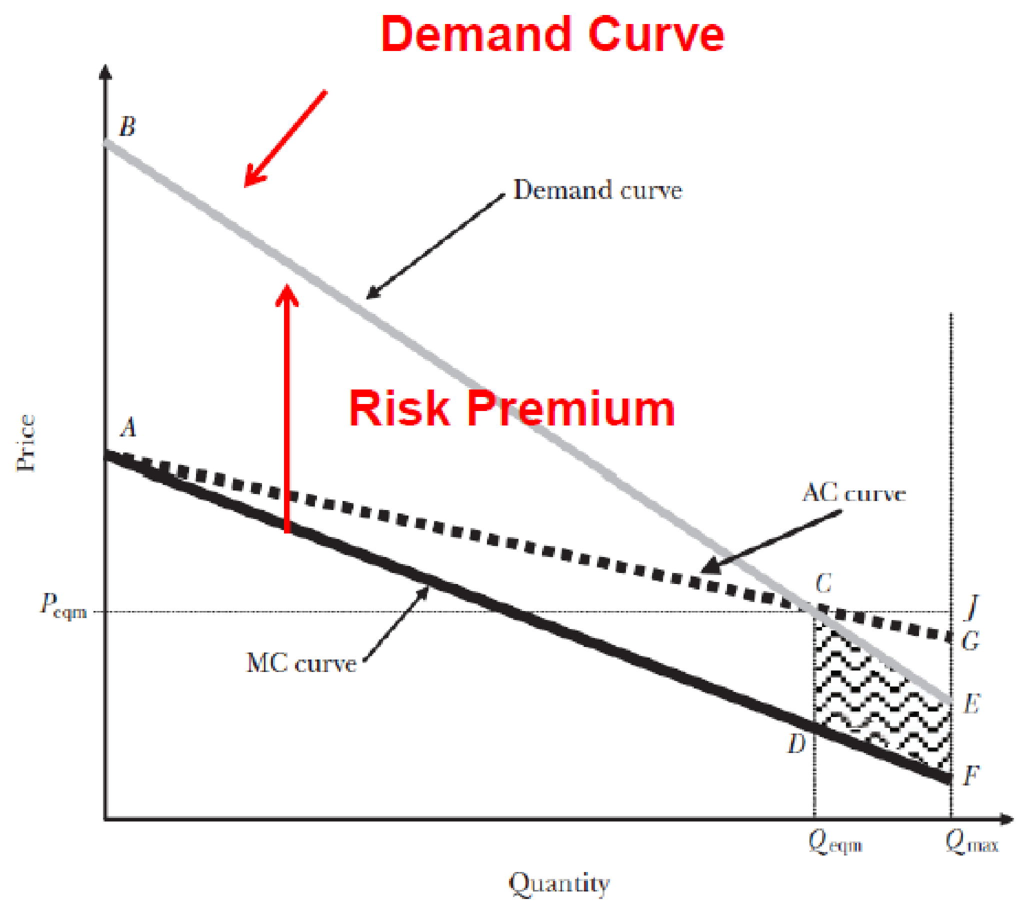
EFC (2010)

- **Y-Axis:** Price of insurance contract
- **X-Axis:** Quantity of people buying insurance contract
- Quantity of insurance contract here is just proportion of consumers buying that contract
  - 0 if no one buys
  - Q_{max} if everyone buys
- Quantity of buying insurance increases moving left to right



EFC (2010)

- **Demand:** The demand curve represents the *quantity (proportion)* of consumers willing to purchase the insurance contract at a given price P
- Simply proportion of consumers with willingness to pay greater than P.
- Demand from:
  - Risk aversion
  - Health risk

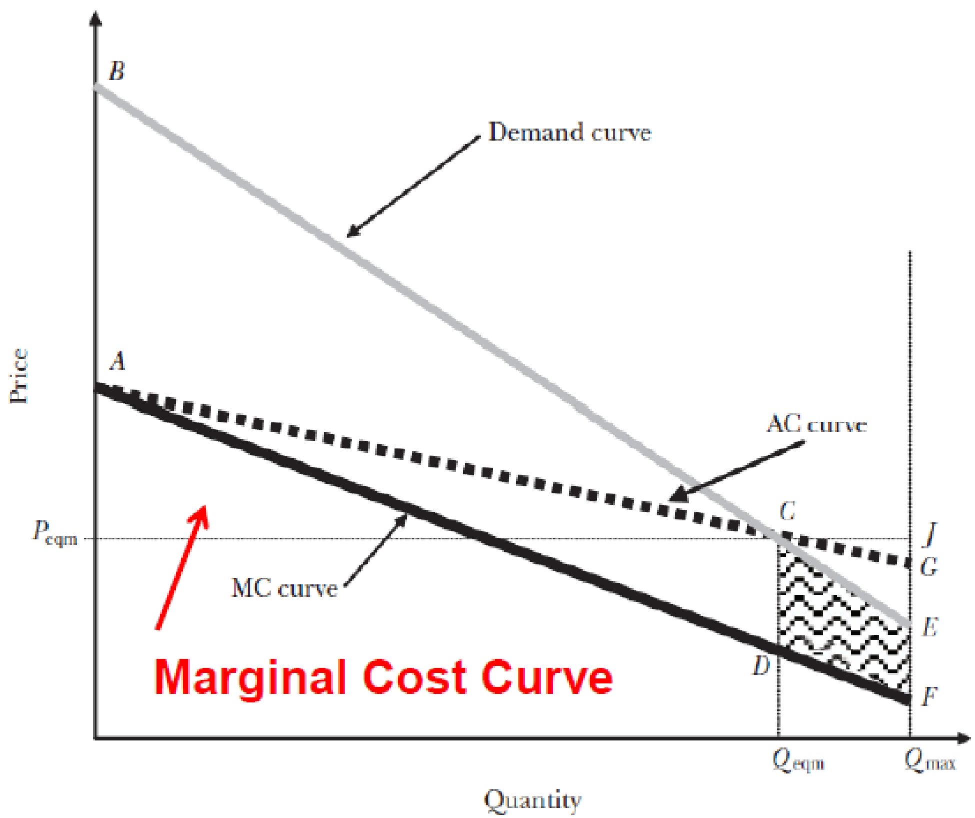


EFC (2010)

- **Marginal Cost (MC):** Expected cost to insurer for *marginal* consumers buying at price P

- Marginal cost would be the same as the demand curve in this simple setup if consumers were risk neutral

- Marginal cost is both:
  - Expected reduction in consumer spending from insurance
  - Expected increase in insurer costs if consumer buys

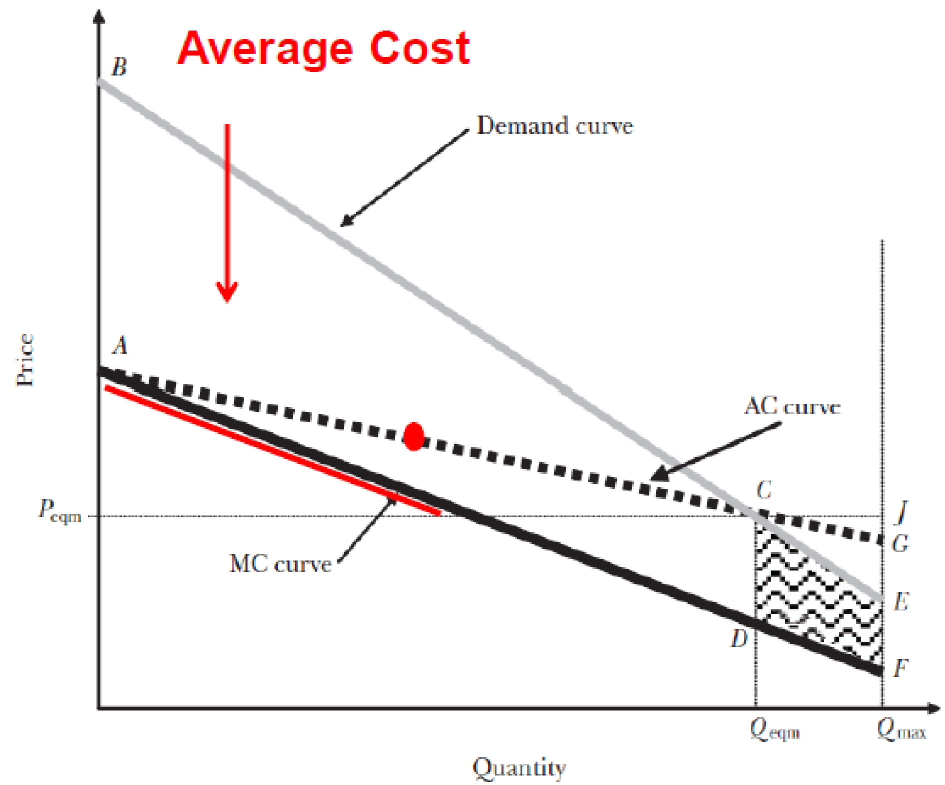


EFC (2010)

- **Average Cost (AC):** Expected *average cost* to insurer for *all* consumers purchasing insurance at price P

- Average cost for given price P in graph is simply average expected cost of those with willingness-to-pay larger than P

- Thus, the average cost curve for price P and implied quantity Q is just the *average* of the marginal cost curve to the left of quantity Q

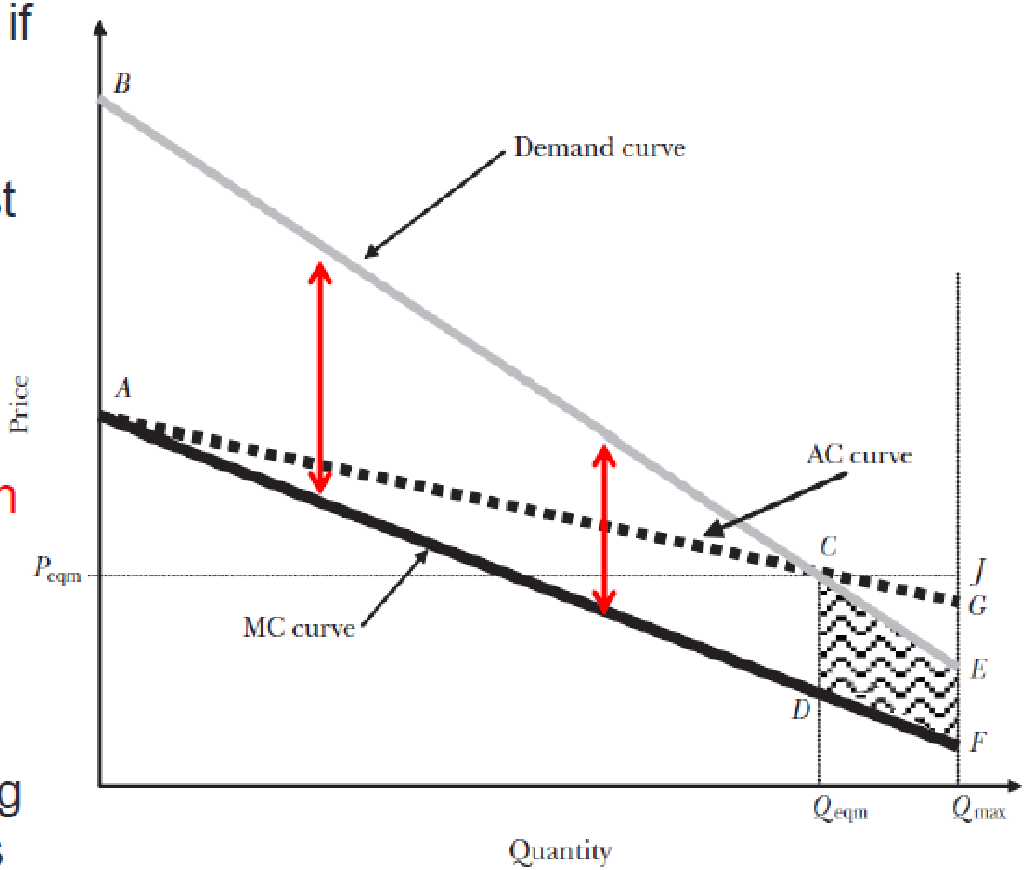


EFC (2010)

- Social welfare is increased if all consumers who have willingness-to-pay greater than the their expected cost of insurance to the insurer *actually buy insurance*

- How many consumers do we want to buy insurance in this basic setup?

- Demand (willingness-to-pay) is *always greater* than marginal cost here, implying that we want *all* consumers to buy insurance



Risk-Adjustment and Adverse Selection

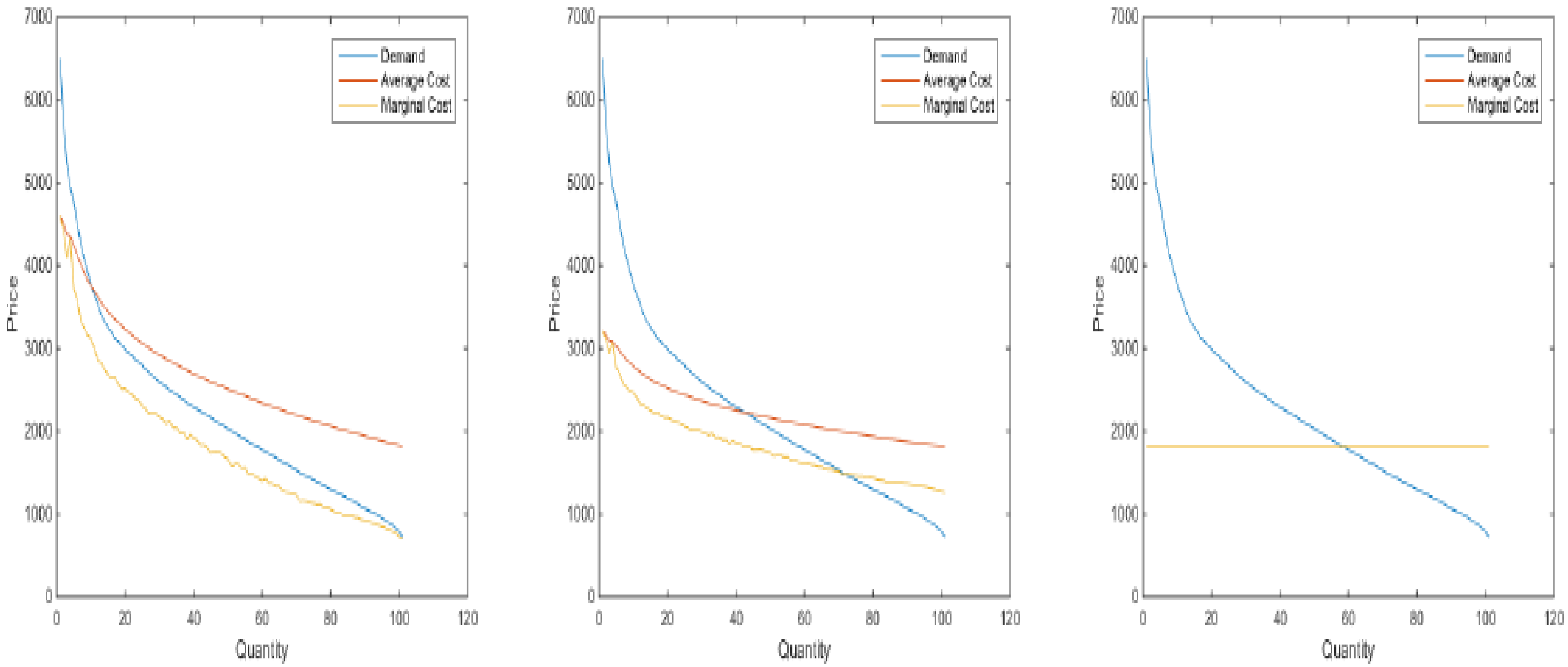
- Insurer risk-adjustment is key policy tool to combat adverse selection in markets with community rating

- Risk-adjustment transfers money from insurers who enroll healthy enrollees to insurers who enroll sick enrollees based on some function

- Potential elements of function:
  - -- Ex-post claims
  - -- Ex-ante risk measures
  - -- Demographics

Risk-Adjustment and Adverse Selection

- Insurer risk-adjustment flattens the average cost curve, so reduces degree of adverse selection



Risk-Adjustment and Insurer Responses

- Great in theory, some difficulties with implementing in practice, including endogenous insurer responses to RA scheme

- Lavetti and Simon (2018): formulary design in Medicare Part D responds to incentives to enroll profitable patients. Insurers integrated with medical insurance behave differently than drug plans alone.

- Geruso and Layton (2018): privatized Medicare patients have 6 to 16% higher diagnostic risk scores than FFS Medicare patients, holding all else equal, presumably due to upcoding in response to risk adjustment

Handel, Hendel and Whinston, *Econometrica*, 2015

“Equilibria in Health Exchanges: Adverse Selection vs. Reclassification Risk”

Motivation

- Great deal of interest has focused on the creation of health insurance exchanges. In ACA:
  - Annual policies
  - Four pre-specified plans with coverage 60%, 70%, 80%, 90%
  - Restrictions on pricing pre-existing conditions, demographics

- This type of heavily regulated insurance market, termed “managed competition” is used in a variety of settings:
  - Switzerland (1996), Netherlands (2006)
  - Private insurance exchanges (Pauly and Harrington (2013)

- Use equilibrium framework we develop to empirically study the interplay between two potential sources of inefficiency: **adverse selection** and **reclassification risk**.

Adverse Selection & Re-Classification Risk

- ACA aims to eliminate reclassification risk (RCR) through pricing regulation, but at possible cost of more adverse selection (within market / into market)

- **Our primary focus:** Study trade-off between these two inefficiencies within an equilibrium framework

  -**Ask:** How would alternative pricing regulations (e.g. age, health status) affect market outcomes and welfare?

  -**Impact:** As regulation allows more opportunities for insurers to price specific risks (i) reduced welfare loss from within-market adverse selection and (ii) increased welfare loss from RCR

  -**Additionally:** Insurer risk-adjustment transfers, market participation, different long-run welfare notions, non-price contract regulation, multi-year contracts

Methodology Overview

1. Use insurance choice and health outcomes data to estimate joint distribution of risk preferences and health risk for population of insured individuals [based on Handel(2013)]

2. Develop equilibrium model of an exchange that provides and algorithm for identifying equilibria
   - -Multi-plan competition, free entry

3. Use estimated preferences, plus health / cost information to compute equilibria for this population of insured individuals (actually, a "pseudo-population") under various pricing rules

4. Evaluate welfare for this population under various pricing rules
   - -Short-run welfare and AS, long-run welfare and RCR
   - -Tradeoff between adverse selection and reclassification risk

Empirical Characterization of Risk

R is ratio of variance of total expenditures to mean
φ captures how much health status info known at contracting

Final Sample Total Health Expenditure Statistics

Ages	Mean	S. D.	S. D. of mean	S. D. around mean	R	ϕ
All	6,099	13,859	6,798	9,228	31,369	0.24
25-30	3,112	9,069	4,918	5,017	26,429	0.29
30-35	3,766	10,186	5,473	5,806	27,550	0.29
35-40	4,219	10,753	5,304	6,751	27,407	0.24
40-45	5,076	12,008	5,942	7,789	28,407	0.25
45-50	6,370	14,095	6,874	9,670	31,149	0.24
50-55	7,394	15,315	7,116	11,092	31,722	0.22
55-60	9,175	17,165	7,414	13,393	32,113	0.19
60-65	10,236	18,057	7,619	14,366	31,854	0.18

Model

Model characterizes equilibria in exchanges (two classes of plans priced in competitive market at same time, potentially with same insurer offering both plans)

-- Enforced mandate

-- Provides conditions for existence, uniqueness

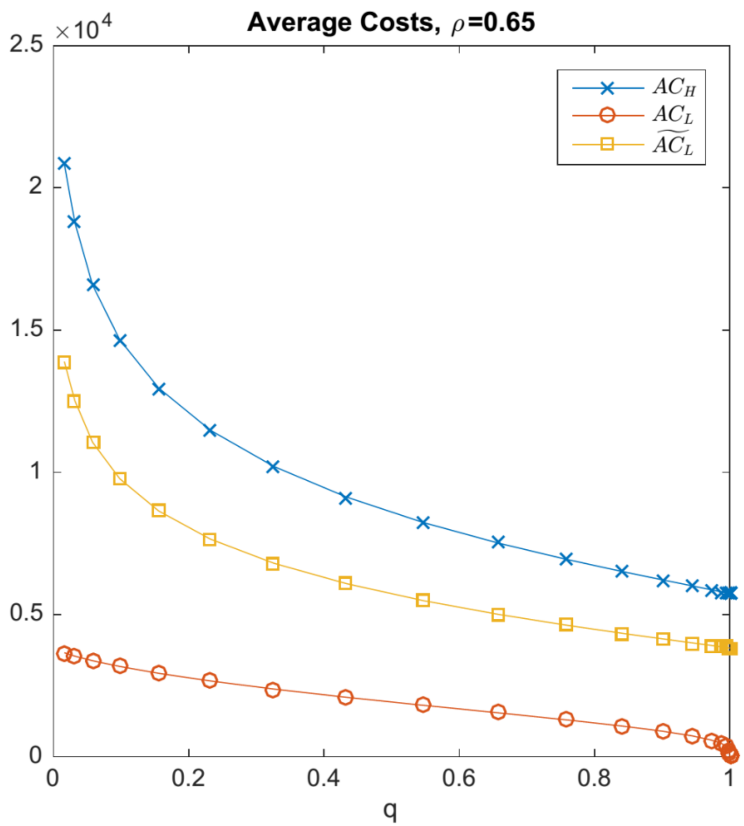
-- Nash equilibrium (SP and MP) and Riley equilibrium (harder to deviate, needed to ensure existence)

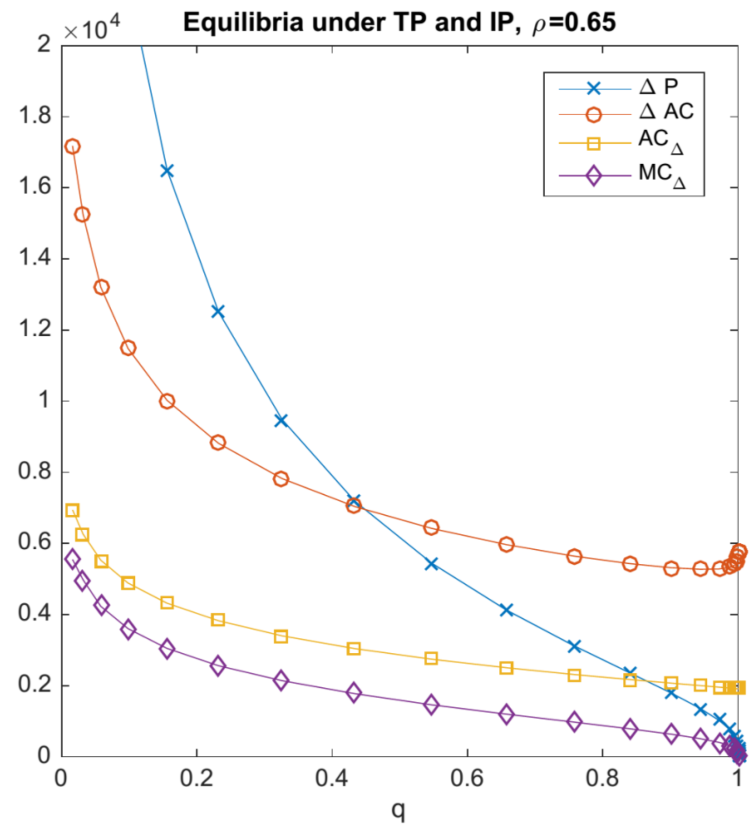
- EFC (2010)*:* pricing of one “add-on” policy given fixed price of base policy. Always get existence of NE. Never get full unraveling with strict risk aversion and Pr(loss)>0.

- Comparison to HHW setting:
  - Pricing of two policies allows cream skimming, which undermines existence
  - Can get complete unraveling with strict risk aversion and Pr(loss)>0 (Intuition: high WTP consumers now benefit from pooling with low WTP consumers at low coverage)

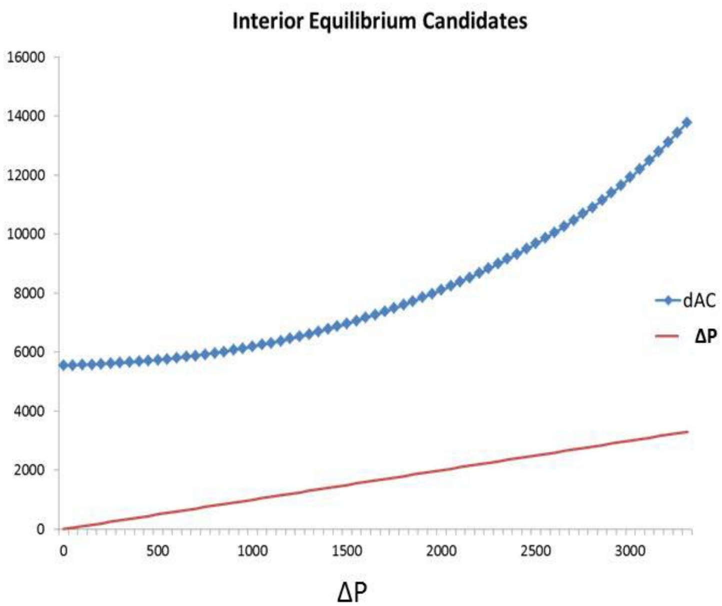
Model: EFC vs. HHW

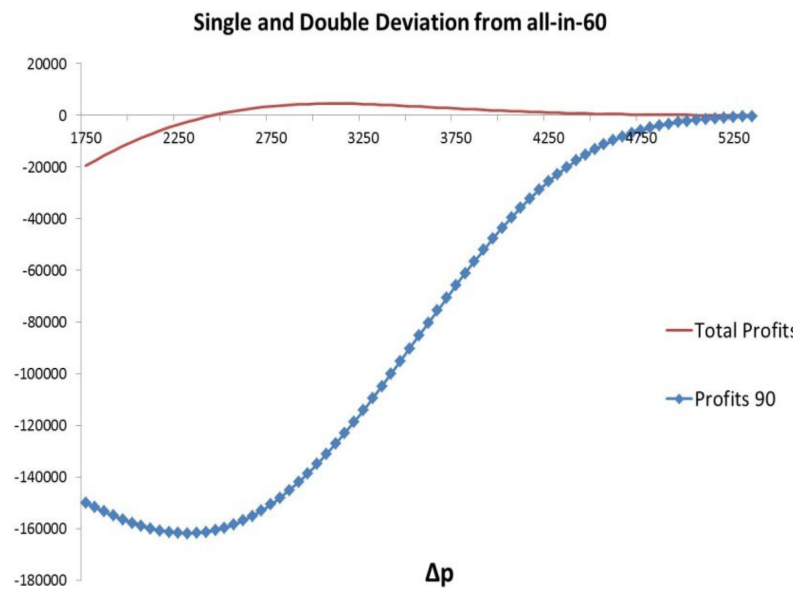
Comparison in Weyl and Veiga (Pricing Institutions, 2016) shows that market is much more likely to unravel in HHW market setup than in EFC market setup. Both setups are potentially “right” depending on market institutions





Empirical Results: Pure Community Rating





Equilibrium Concept	P_{60}	P_{90}	s_{60}	s_{90}	AC_{60}	AC_{90}
Single policy-NE	4051		100	0	4051	
Multi-policy NE	No equilibrium					
Riley	4051		100	0	4051	

Health-Status Pricing: ACG Quartiles

- Now, as example of limited health-status based pricing, suppose pricing can be based on ACG-quartiles.

  --Creates 4 separate sub-markets.

  --Follow the same steps for each sub-market

- Increases re-classification risk, decreases adverse selection

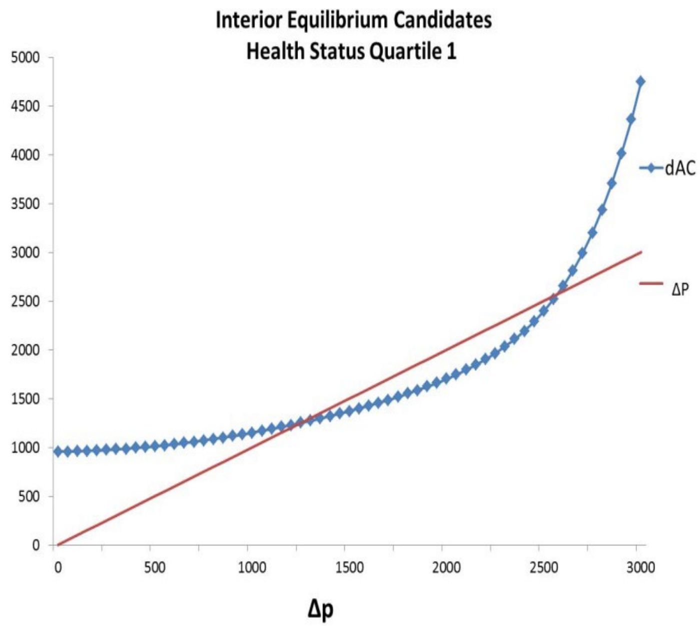
- Summary for pricing by health-status quartiles:

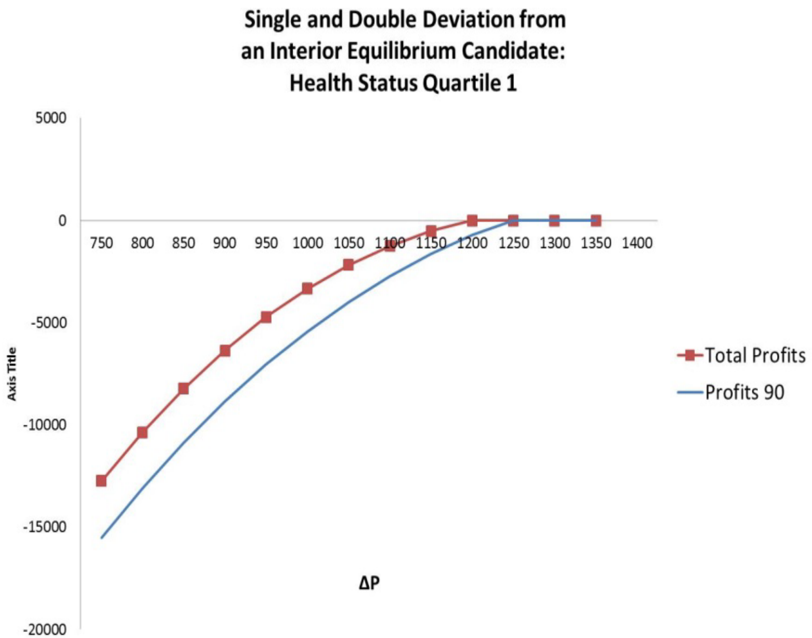
  --For every quartile, a 60 deviation is profitable against “all-in 90”

  --Reduced unraveling in healthiest quartile, still full unraveling in other 3

  --At risk of moving to one of four premiums next year (RCR)

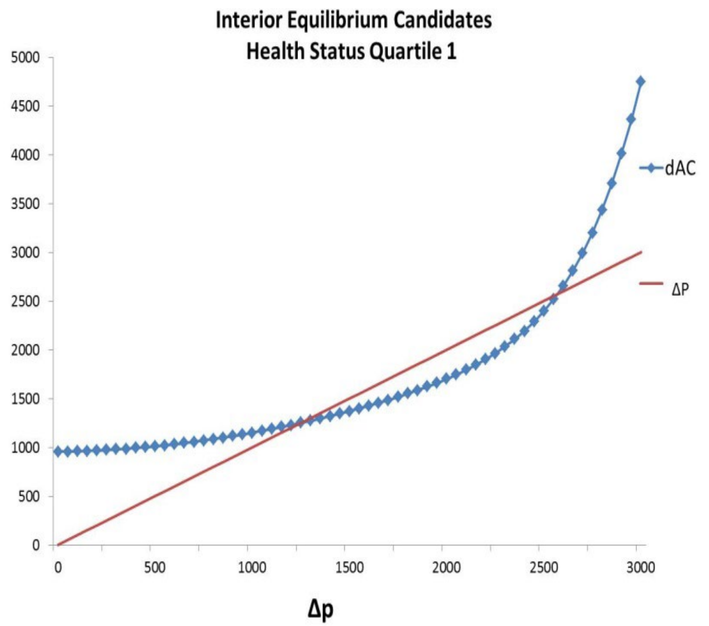
Equilibria with Health Pricing: Health Status Quartiles

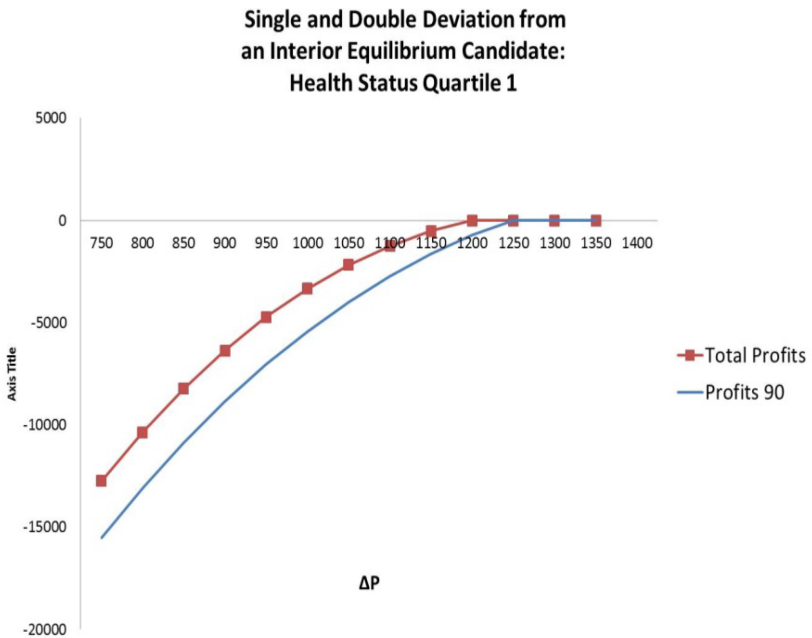




Market	Equilibrium Type	P_{60}	P_{90}	S_{60}	S_{90}	AC_{60}	AC_{90}
Quartile 1	RE/sp-NE/mp-NE	289	1550	64.8	35.2	289	1,550
Quartile 2	RE/sp-NE	1467	1467	100	0	1467	
Quartile 3	RE/sp-NE	4577	4577	100	0	4577	
Quartile 4	RE/sp-NE	9802	9802	100	0	9802	

Equilibria with Health Pricing: Health Status Quartiles





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Reclassification risk

Equilibria with Health Pricing: Adverse Selection

Welfare Analysis: AS and RCR

- **Goal:** Evaluate the ex ante utility of an ***unborn individual***
  - Uncertainty about health status transitions in lifetime
  - Within-year uncertainty after purchasing insurance contract

- Lifetime welfare calculation depends on pricing regime *x* and equilibrium notion *e*

- **Step 1:** compute certainty equivalent of equilibrium choice in one-year market for each individual in data, characterized by (λ,γ):

$$CE_{e,x}(\lambda,\gamma)$$

- Also compute CE if all are in 90 policy at $P_{90}^{e,x} = \underline{AC}_{90}$:

$$CE_{all90}(\lambda_t,\gamma)$$

Welfare Analysis: AS and RCR

Integrate one-year at a time market outcomes into lifetime analysis

Step 2: Compute the **fixed annual payment $y_{x,x',e}(\gamma)$** that would make ex ante lifetime expected utility in pricing regime x equal to that in pricing regime x':

$$\sum_t \delta^t E_{x_t}[-e^{-\gamma\{I_t - CE_x(\lambda_t,\gamma)+y_{x,x'}(\gamma)\}} \mid \gamma] = \sum_t \delta^t E_{x_t}[-e^{-\gamma\{I_t - CE_{x'}(\lambda_t,\gamma)\}} \mid \gamma]$$

Key Assumptions for computing $y_{x,x',e}(\gamma)$:

- Discount factor = 0.975
- Steady state population, represented by our sample
- γ is age 25 risk aversion (individual assumes no change in risk aversion, but true evolution of health conditional on γ)
- Get distribution of health at each age t conditional on γ by pulling all individuals of age t whose (acg, γ) lies in a band around the relation we estimated (Idea: γ at birth determines health process and also evolves with age).
- I_t either fixed or follows manager/non-manager age profile

Welfare Comparisons

Example: Compare relative long-run welfare under case of pure community rating to case of pricing on health status quartiles.

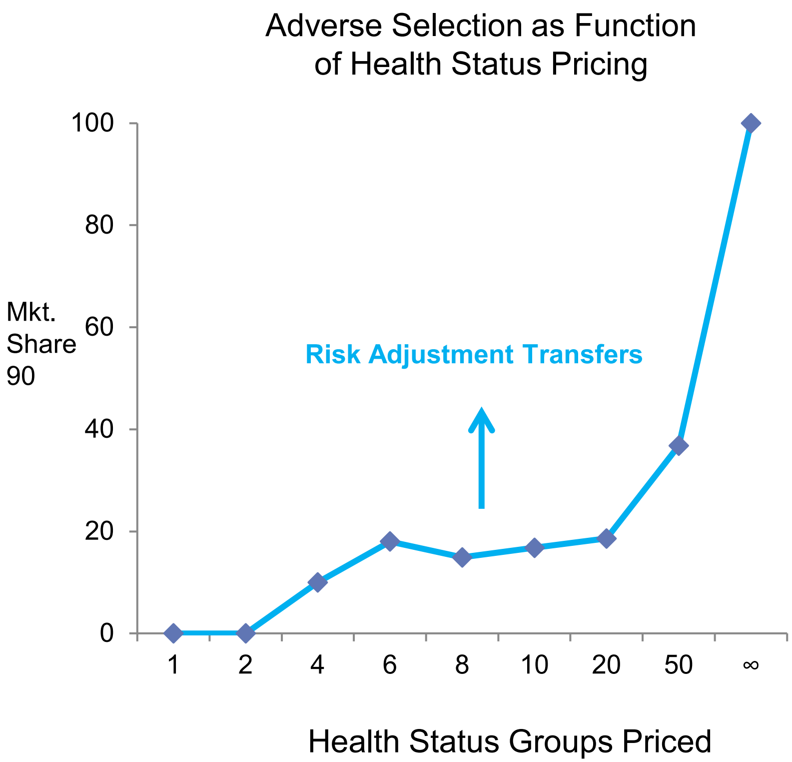
- Solution concept is Riley equilibrium

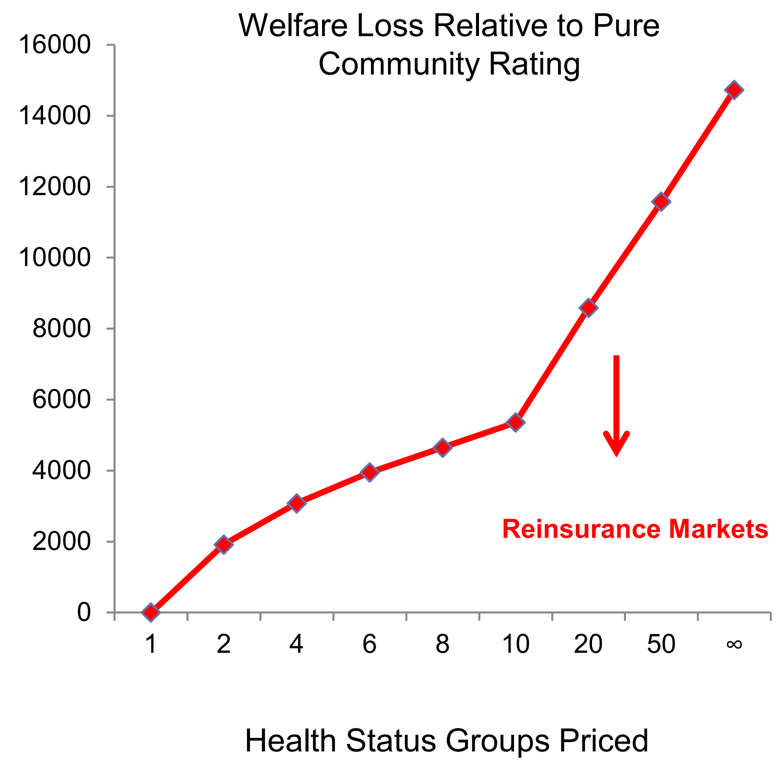
Compare to:

- $6559 average annual total expenses
- Fixed income, mean risk aversion, willing to pay **$619 for 90 at pop. AC**

Welfare Loss from ACG-quartile Pricing in Riley/sp-NE ($/year)			
Risk Parameter	Fixed income	Non-manager Income Path	Manager Income Path
0.0002	2200	1499	-384
0.0003	2693	1688	-613
0.0004	3082	1821	-886
0.0005	3399	1764	-973
0.0006	3626	2115	-891

Varying the Extent of Health-Based Pricing: Adverse Selection vs. RCR





Extensions

1. Consumers borrowing and saving reduces negative impact of reclassification risk, but welfare loss from quartile-based pricing still lower than that from community rating

2. Alternative contract actuarial value regulation

3. Insurer risk-adjustment reduces welfare loss of adverse selection by over 50%, holding all else equal.

4. What happens if mandate not fully enforced?

Lessons

1. Health insurance contracts typically community rated and one-year at a time. Relaxing community rating induces tradeoff between adverse selection and reclassification risk. <u>Think about this as a tradeoff between short-run risk and long-run risk.</u>

2. Moving away from community rating, holding other regulations constant, is <u>clearly welfare reducing</u> for the consumers we study.

3. Equilibria in health exchanges can be subtle to analyze: when there are two regulated types of competitive plans offered, as in HHW, you have to worry about existence / uniqueness, unlike in EFC framework

GHHW (2019): Long-Run Dynamic Contracts

Newer work by HHW studies welfare implications of dynamic contracts that have:

-- One-sided commitment where firms commit but consumers don't

-- Full risk-rating starting at age 25

-- Firm commits to sequence of contingent premiums

-- Consumers can lapse (leave at any time)

Optimal contracts have frontloading: consumers pay higher than actuarially fair premiums up front so firm can break even on longer-run commitment.

Empirical implementation with Utah APCD and two other datasets

Potential benefits in certain situations, though less than we expected due to costs of frontloading

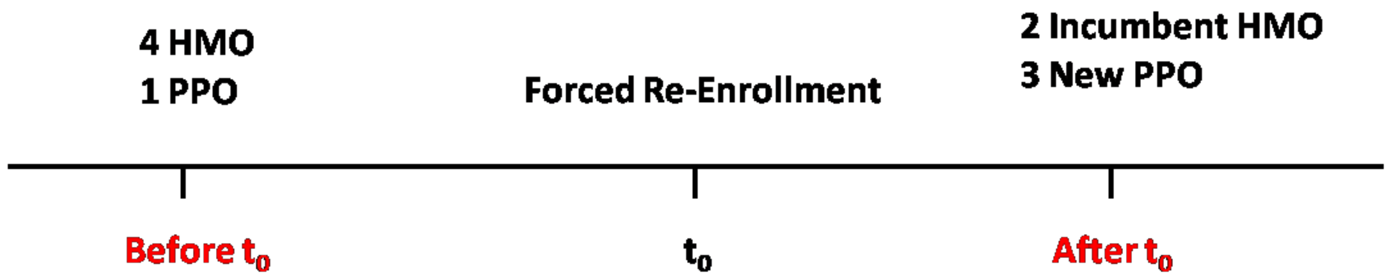
Handel, *AER*, 2013

“Adverse Selection and Inertia in Health Insurance Markets: When Nudging Hurts”

Empirical Investigations of Inertia: Questions

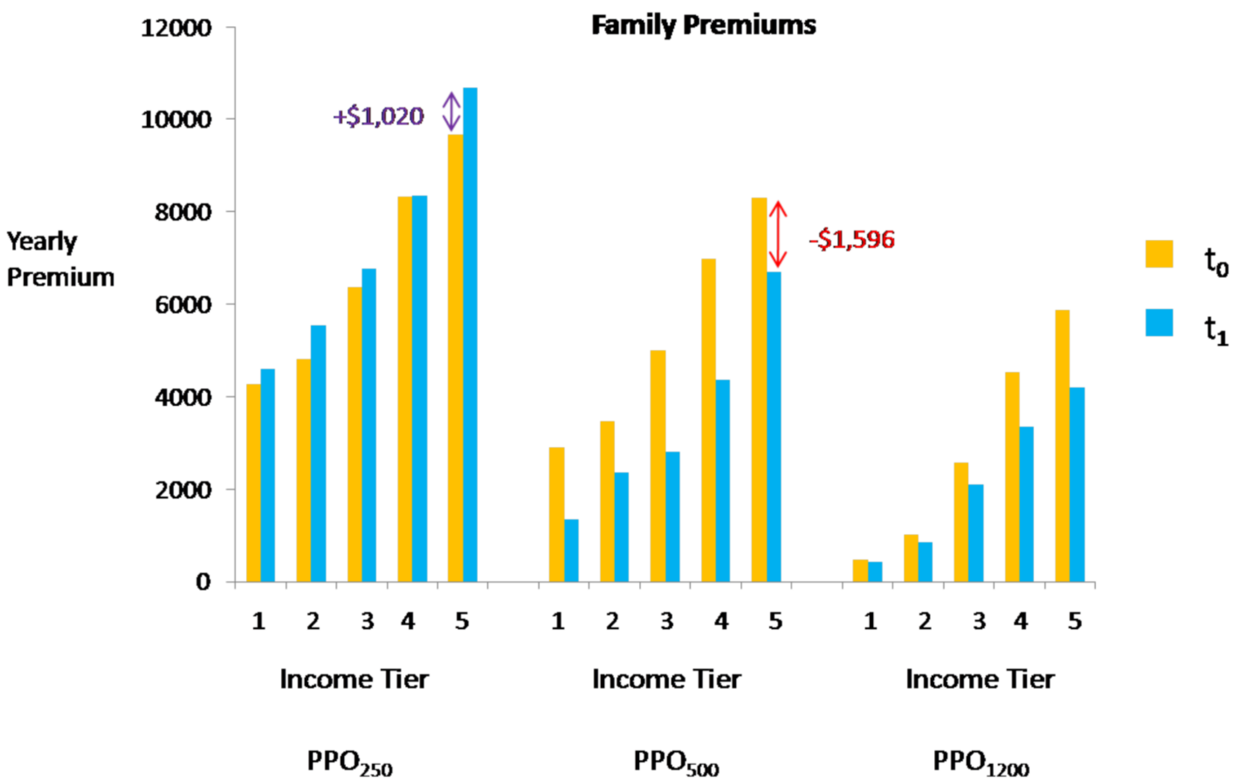
- Why don’t we see rampant adverse selection in practice?
- Can we separate consumer inertia from persistent unobserved preference heterogeneity?
- Can we distinguish between different mechanisms contributing to consumer inertia?
- Do we need to distinguish between different inertia mechanisms to answer key policy questions?
- What are some interesting additional steps to take to better understand the extent / reasons for consumer inertia?

Forced Active Choice



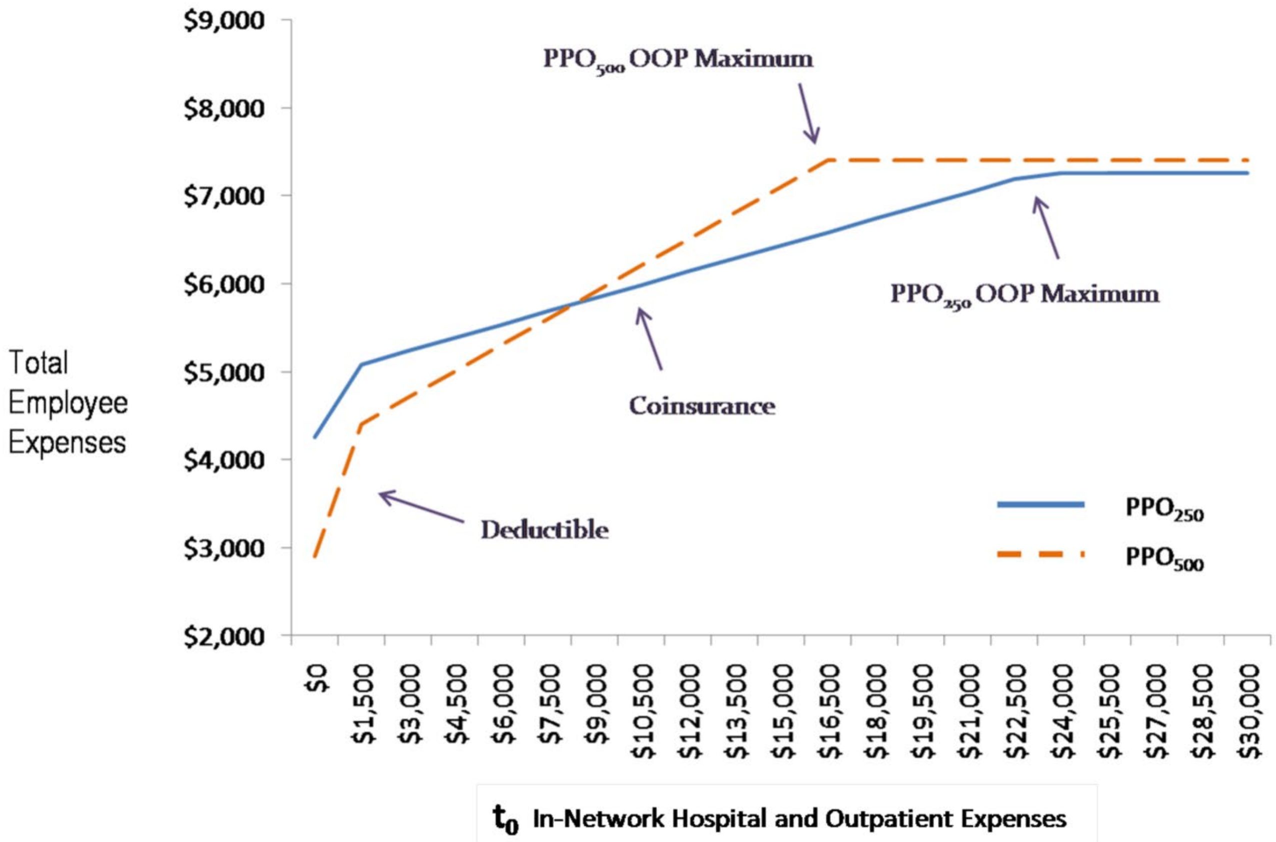
- Firm changed set of options for one year in middle of six-year panel from 2004-2009
- Forced consumer re-enrollment (99.5% actively elected option)
- PPO options after only financially differentiated, HMO and PPO options horizontally differentiated
- Detailed consumer-level claims data with demographics and ability to quantify ex ante health risk

Plans in New Menu



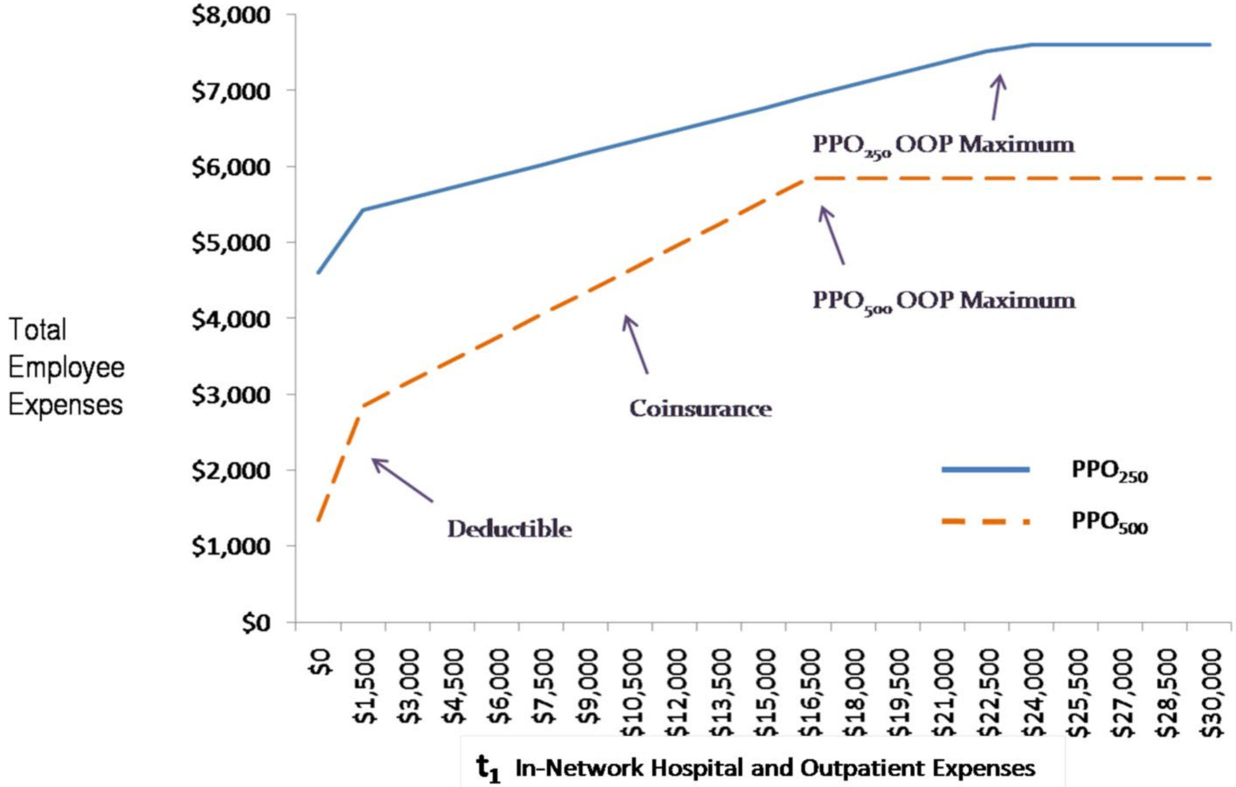
- Large premium changes over time (due to risk selection)
- Premiums depend on income and family status
- Plan price changes linked to average costs of consumer in last year: consumer beliefs?
- Health shocks additional reason why consumers should switch

Descriptive Evidence of Inertia



- Chart describes two of plans offered in year of menu change
- Sick consumers should choose more insurance, healthy less

Descriptive Evidence of Inertia



- For 30% of consumers, generous plan becomes dominated for remaining two years in data with premium shift
- 89% (78%) of families continue to choose that plan 1(2) years after change

Descriptive Evidence of Inertia

Cohort 1
New Entrants at t_0
N = 1377

	Year t_0	Year t_1
PPO_{250}	21 %	20 %
PPO_{500}	23 %	26 %
PPO_{1200}	17 %	15 %
HMO_1	20 %	20 %
HMO_2	19 %	19 %

Cohort 2
New Entrants at t_1
N = 1305

	Year t_0	Year t_1
PPO_{250}	-	11 %
PPO_{500}	-	43 %
PPO_{1200}	-	14 %
HMO_1	-	20 %
HMO_2	-	12 %

- Studying behavior of new employees over time is cleanest test of inertia
- New employee cohorts very similar on all dimensions over time
- Different choice environments

Descriptive Evidence of Inertia

		Year t_0	Year t_1
Cohort 1 New Entrants at t_0 N = 1377	PPO_{250}	21 %	20 %
	PPO_{500}	23 %	26 %
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	HMO_1	20 %	20 %
	HMO_2	19 %	19 %
Cohort 2 New Entrants at t_1 N = 1305	PPO_{250}	-	11 %
	PPO_{500}	-	43 %
	PPO_{1200}	-	14 %
	HMO_1	-	20 %
	HMO_2	-	12 %

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Mechanisms Underlying Inertia

- **Transaction costs** (paperwork, financial charge for switching)
- Search costs (cost of researching different options, two stage model with decision to search based on beliefs)
- **Product switching costs** (learning to use new product, capital built up with existing product)
- Inattention (could be rational or not)
- Distinguishing between these different reasons for inertia is challenging without additional experiment / survey

Model to Quantify Key Micro-Foundations

- Active choosers in forced switch year are neoclassical expected-utility maximizing consumers who are (i) risk averse and (ii) have heterogeneous health risks

- Inertial consumers have same neoclassical preferences, but leave money on table due to variety of micro-foundations
  - Sufficient for certain key counterfactuals / welfare, given assumptions

$$U_{kjt} = \int_0^\infty f_{kjt}(OOP) u_k(W_k, OOP, P_{kjt}, \mathbf{1}_{kj,t-1}) dOOP$$

$$u_k(x) = -\frac{1}{\gamma_k(X_k^A)} e^{-\gamma(X_k^A)x}$$

$$x = W_k - P_{kjt} - OOP + \eta(X_{kt}^B, Y_k)\mathbf{1}_{kj,t-1} + \delta_k(Y_k)\mathbf{1}_{1200} + \alpha H_{k,t-1}\mathbf{1}_{250} + \epsilon_{kjt}(Y_k)$$

Model Estimates

Parameter	Base	Primary	MH Robust	γ Robust	ϵ Robust
Switching Cost Individual, η_s	1779 (72)	**1729** (28)	1859 (107)	2430 (116)	1944 (150)
Switching Cost Family, η_f	2354 (62)	**2480** (26)	2355 (113)	3006 (94)	2365 (34)
SC - FSA	- -	**-551** (56)	-669 (155)	-723 (131)	-417 (50)
SC - Income	- -	**-32** (13)	-59 (15)	-8 (43)	-7 (15)
SC - Quant	- -	**5** (138)	-40 (80)	-537 (223)	-6 (92)
SC - Manager	- -	**198** (292)	277 (164)	875 (200)	224 (244)
SC - Chronic	- -	**80** (46)	29 (67)	-221 (148)	67 (35)
SC - Salient	- -	**156** (83)	95 (60)	61 (212)	123 (54)
SC - Total Pop. Mean, η **[Pop. Standard Deviation]**	2032 [446]	2087 [286]	1886 [387]	1914 [731]	1986 [316]
Risk Aversion Mean - Intercept , μ	$3.12 * 10^{-4}$ $(1.1 * 10^{-5})$	$2.32 * 10^{-4}$ $(9.0 * 10^{-6})$	$2.31 * 10^{-4}$ $1.10 * 10^{-5}$	-8.94 (0.43)	$1.90 * 10^{-4}$ $1.0 * 10^{-5}$
Risk Aversion Mean - Income ,	$4.21 * 10^{-5}$ $(3.0 * 10^{-6})$	$2.90 * 10^{-5}$ $(4.0 * 10^{-6})$	$1.80 * 10^{-5}$ $3.00 * 10^{-6}$	0.07 (0.016)	$2.40 * 10^{-5}$ $3.00 * 10^{-6}$
Risk Aversion Mean - Age ,	- -	$2.27 * 10^{-6}$ $(1.7 * 10^{-7})$	$3.45 * 10^{-6}$ $1.80 * 10^{-7}$	0.28* (0.011)	$2.59 * 10^{-6}$ $1.50 * 10^{-7}$
Risk Aversion Std. Deviation , σ_γ	$1.88 * 10^{-4}$ $(8.0 * 10^{-6})$	$1.88 * 10^{-4}$ $(6.63 * 10^{-5})$	$1.27 * 10^{-4}$ $6.00 * 10^{-6}$	1.37 (0.06)	$1.04 * 10^{-4}$ $5.9 * 10^{-5}$

Do We Care About Mechanisms?

- It depends on the question you want to answer.
- Do you want to compare inertia environment to no inertia environment?
- Do you want to study impact of policy that leads to direct allocation?
- Do you want to compare inertia environment to partial inertia environ.?
- Do you want to consider welfare impact of inertia itself?
- Do you want to study which specific policies might reduce inertia?
  - Some experimental studies try to get at this [e.g. Kling et al. (2012)]
  - Luco (2015) uses field data to separate hassle costs / financial search costs

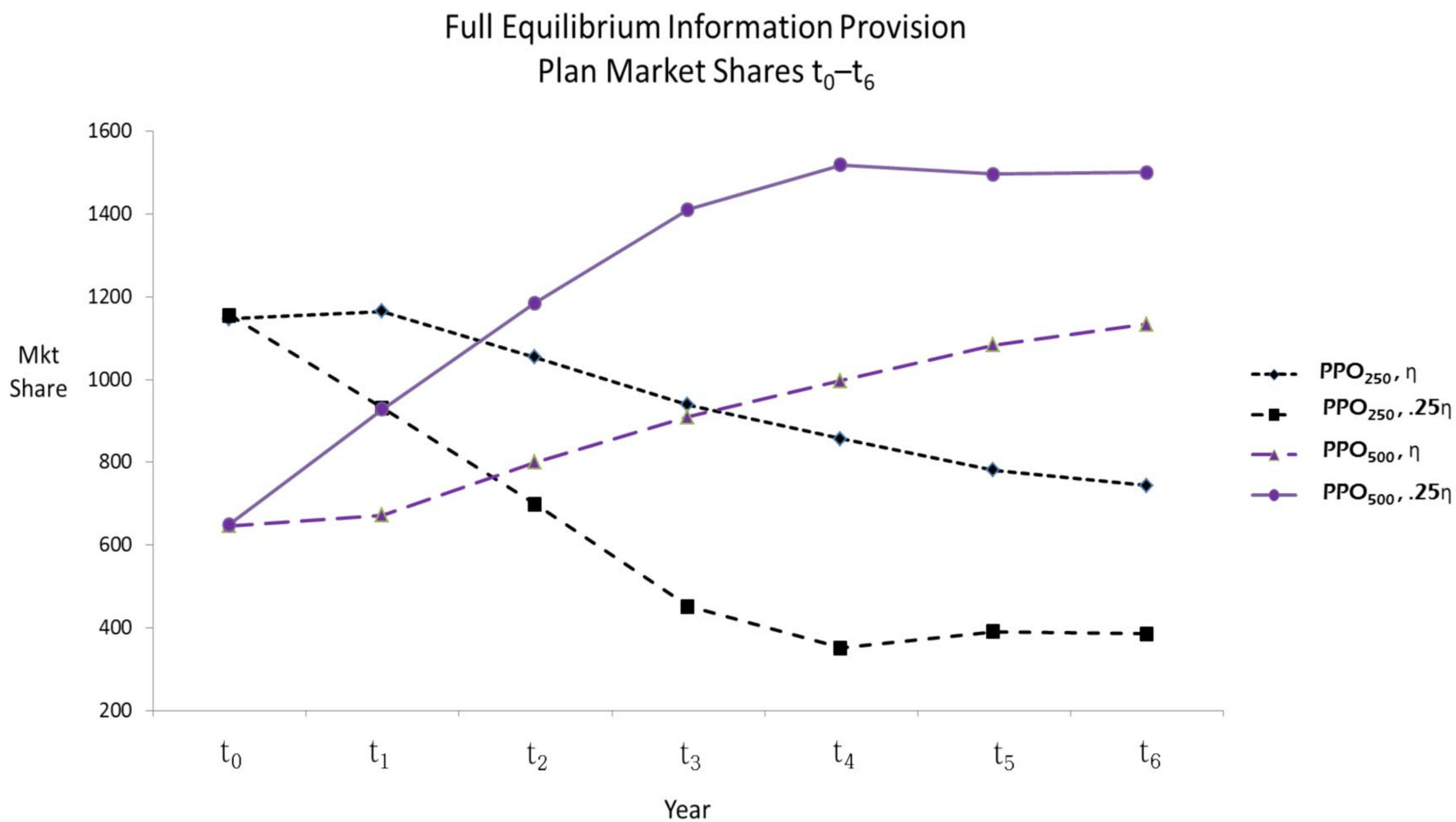
Handel (2013): Policies to Reduce Inertia

- Study the two cases where inertia is reduced and
  - Insurance prices remain as observed
  - Insurance prices readjust due to incremental selection

- In case without endogenous repricing, consumer welfare <u>increases by 6%</u> of mean baseline premiums

- When plans are repriced to reflect new risk selection consumer welfare <u>decreases by 8%</u> because increased adverse selection outweighs better matching to plans
  - Plan pricing follows lagged average cost model typical of employer provided market
  - Recreates subsidy rule w/ lump sum and full incremental premium

Counterfactual: Policies to Reduce Inertia



- Case where inertia reduced by 75% of baseline amount
- Case with no issues with underlying mechanism is 100% reduction

Counterfactual: Policies to Reduce Inertia

	First-Best	Baseline	$.75\eta$	$.5\eta$	$.25\eta$	0
Mean Δ CEQ (% of Premiums)						
Population	\$123 (8.2%)	- (-)	-\$41 (-2.7%)	-\$73 (-4.9%)	-\$115 (-7.7%)	-\$107 (-7.1%)
Switchers	-\$538 (-35.9%)	- (-)	\$1,017 (67.8%)	\$766 (51.0%)	\$186 (12.4%)	\$118 (7.9%)
Non-Switchers	\$953 (63.5%)	- (-)	-\$249 (-16.6%)	-\$371 (-24.8%)	-\$442 (-29.4%)	-\$382 (-25.4%)
Single	-\$683 (-45.5%)	- (-)	-\$153 (-10.2%)	-\$295 (-19.7%)	-\$319 (-21.2%)	-\$286 (-19.0%)
Family	\$826 (55%)	- (-)	-\$54 (3.6%)	\$119 (7.9%)	\$61 (4.1%)	\$47 (3.1%)

- Columns describe amount inertia is reduced by
- Distributional implications as well as mean efficiency implications
- Paper also investigates range of welfare impacts of inertia mechanisms

Counterfactual: Policies to Reduce Inertia

- Second issue is how to treat estimated inertia from welfare perspective in baseline case

- If you don't know, use bounds……

Welfare Impact		η	$.75\eta$	$.5\eta$	$.25\eta$	0
$\kappa = 0$	Welfare Relevant SC	0	0	0	0	0
	Δ CEQ (% Premiums)	-	-$41 (-2.7%)	-$73 (-4.9%)	-$115 (-7.7%)	-$107 (-7.1%)
$\kappa = 0.25$	Welfare Relevant SC	46	47	36	21	0
	Δ CEQ (% Premiums)	-	-$42 (-2.8%)	-$63 (-4.2%)	-$90 (-6.0%)	-$61 (-4.1%)
$\kappa = 0.5$	Welfare Relevant SC	93	94	71	42	0
	Δ CEQ (% Premiums)	-	-$42 (-2.8%)	-$51 (-3.4%)	-$64 (-4.3%)	-$14 (-0.9%)
$\kappa = 1$	Welfare Relevant SC	185	188	142	83	0
	Δ CEQ (% Premiums)	-	-$44 (-2.9%)	-$30 (-2.0%)	-$13 (-0.9%)	-$78 (5.2%)

Lessons

- Inertia can matter a lot in insurance markets
- Need to identify inertia separately from persistent / stable preferences for products
- Inertia and adverse selection can have non-trivial interactions
- Reducing inertia could increase adverse selection and lower welfare, not necessarily the case, but could be
  - -- How do you reduce inertia?
  - -- When is reducing inertia good? Bad?
  - -- Complementary policies to prevent adverse selection change whether reducing inertia is good or bad

Handel, Kolstad and Spinnewijn, *Restat,* 2019

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

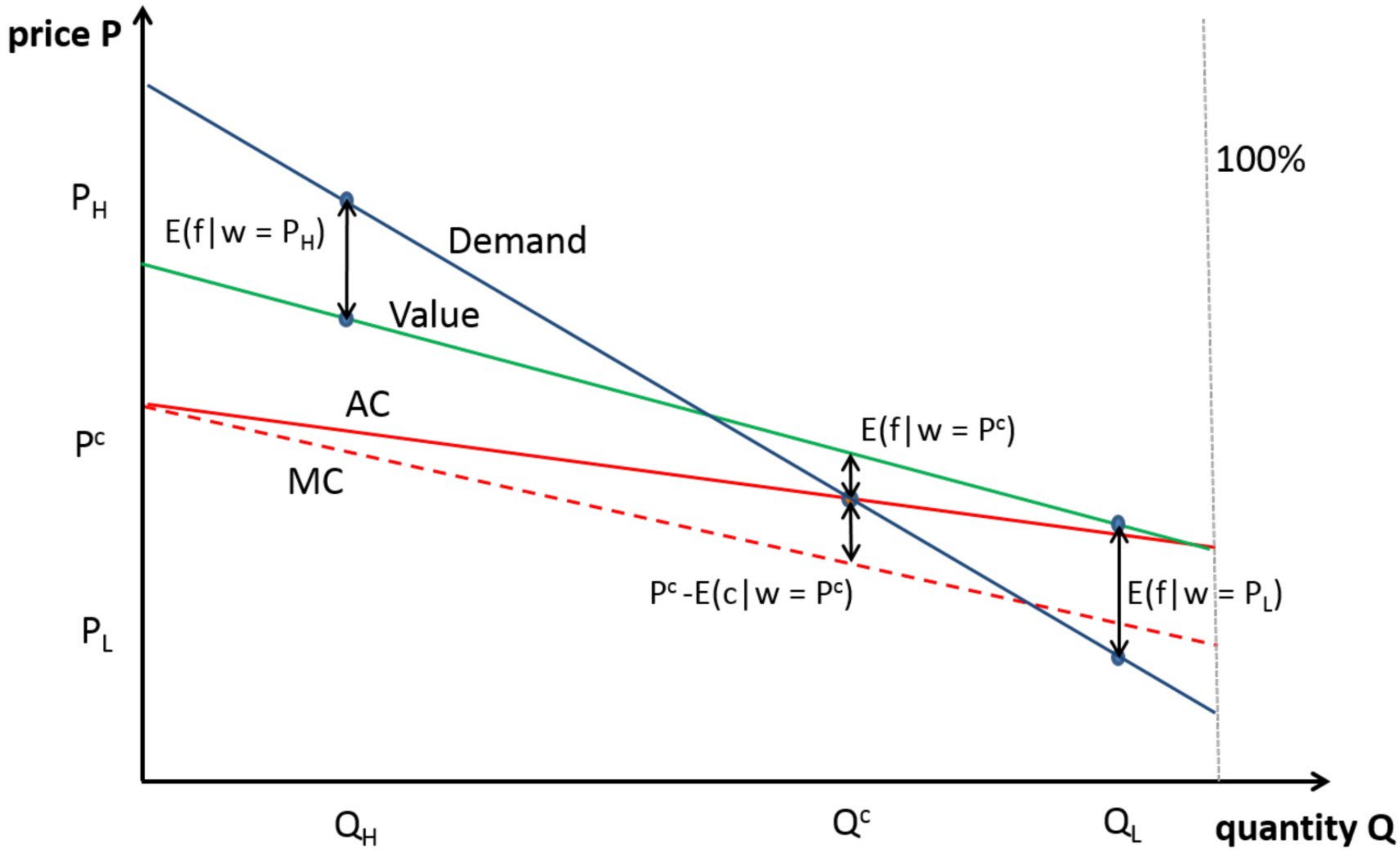
When is it Welfare Enhancing to Improve Consumer Choices?

My *AER* inertia paper shows that reducing inertia can be welfare-reducing if it increases adverse selection

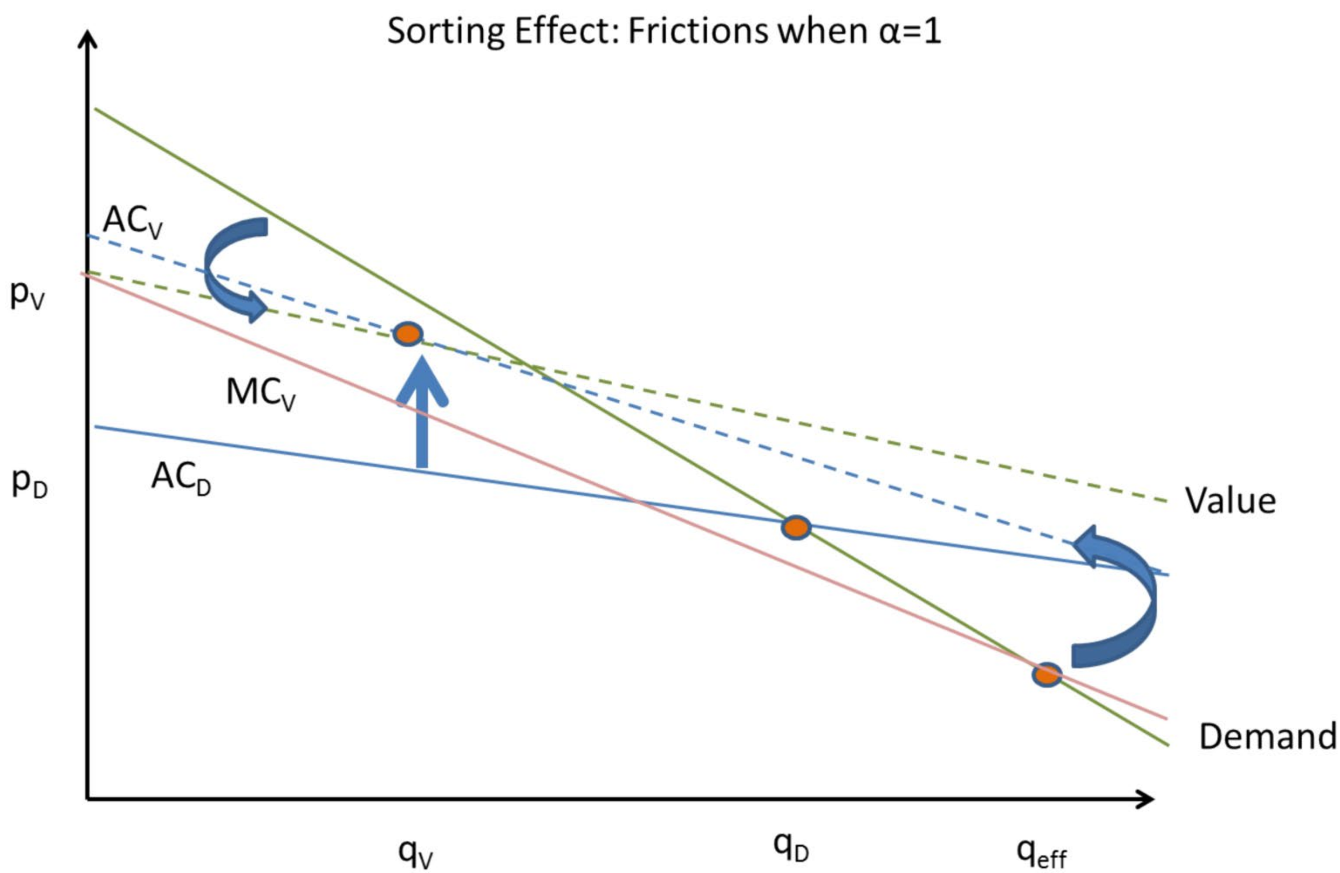
This paper takes three key steps relative to that paper:

1. Considers “active choice” frictions (including behavioral issues)
2. Characterizes when improving choices in selection markets is welfare-increasing vs. welfare-reducing
3. Empirical implementation using data / empirical setup from Handel and Kolstad (2015)

Demand vs. Welfare-Relevant Value



Improved Choices in Equilibrium ($\alpha = 1$)



Theory

Corollary 1 *In a competitive market with under-insurance, the marginal welfare gain from reducing information frictions is lower (and potentially negative) if (i) the mean friction value (i.e.,* $E_{P(\alpha)}(f)$*) is higher, (ii) the re-sorting on costs (i.e.,* $-cov_{P(\alpha)}(c, f)$*) is stronger and (iii) the re-sorting on surplus (i.e.,* $-cov_{P(\alpha)}(s, f)$*) is weaker.*

Results develop comparative statics

-- Mean / variance in costs

-- Mean / variance in surplus from insurance

-- Mean / variance in information frictions

-- Correlations between all of the above

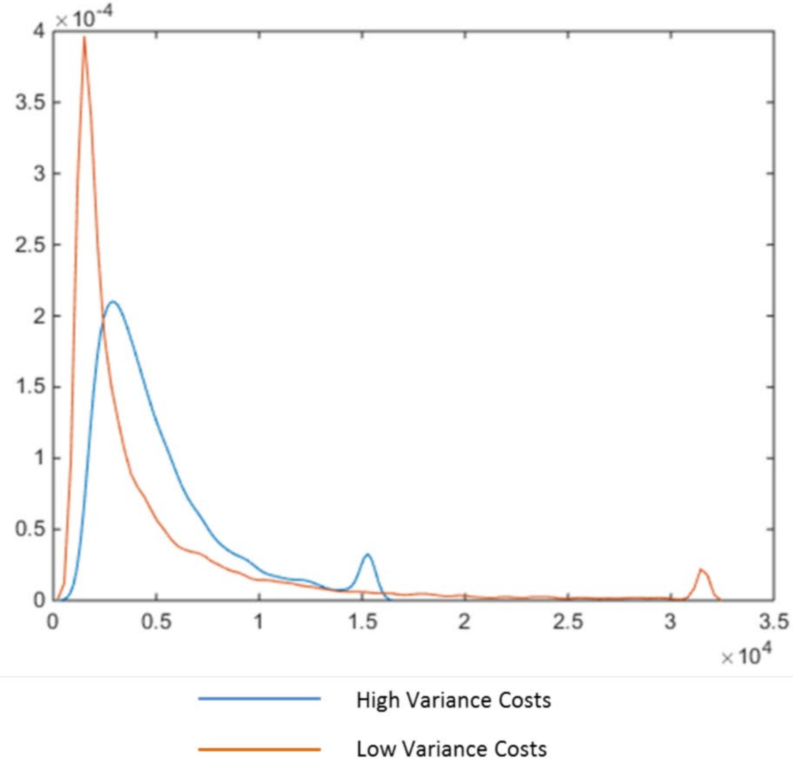
Simulations

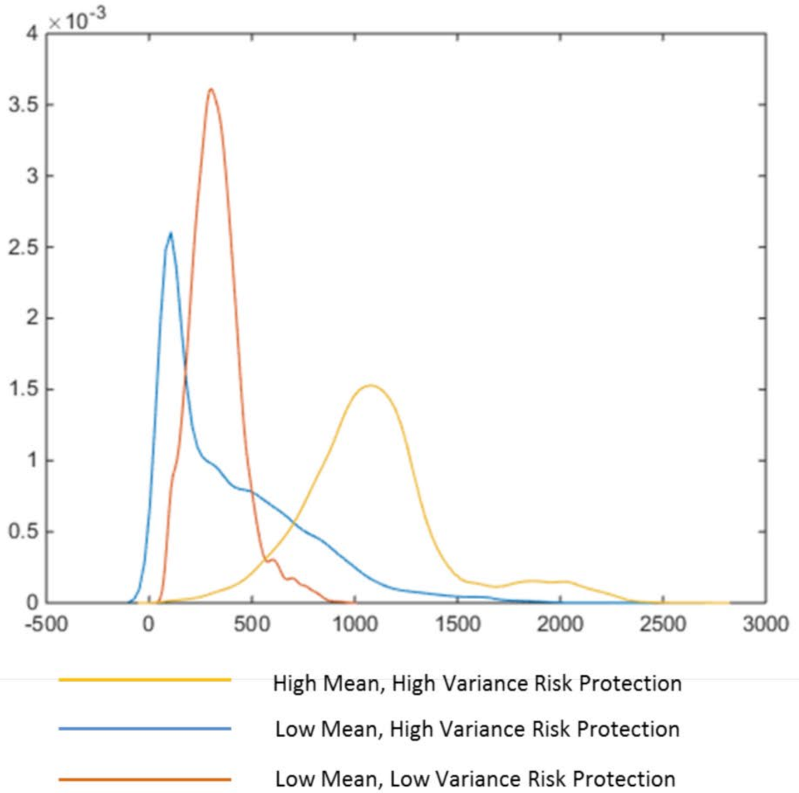
Simulations **Key Micro-Foundations**	
Total Costs - μ_C*	5,373
Total Costs - σ_C - High*	6,819
Total Costs - σ_C - Low*	2,990
Frictions - μ_f - High**	2,500
Frictions - μ_f - Low**	0
Frictions - σ_f - High**	2,000
Frictions - σ_f - Low**	500
Risk Aversion - μ_S - High***	$1 * 10^{-3}$
Risk Aversion - μ_S - Low***	$3 * 10^{-4}$
Risk Aversion - σ_S - High***	$4 * 10^{-4}$
Risk Aversion - σ_S - Low***	$1 * 10^{-4}$

*Costs simulated from lognormal distribution.
**Frictions Simulated from normal distribution.
***Risk preferences simulated from normal distribution, truncated above 0.

- Market in spirit of that studied in EFC (2010)
- Simulations elucidate comparative statics

Simulations





Simulations

- Following Proposition 2 in paper, welfare implications of reducing frictions depends on σ_f and σ_c . Low σ_c complementary to friction reduction policies

Simulations
Equilibrium Surplus

	Low σ_C Low μ_S Low σ_S	Low σ_C Low μ_S High σ_S	High σ_C Low μ_S Low σ_S	High σ_C Low μ_S High σ_S	High σ_C High μ_S High σ_S
High μ_f, High σ_f	0.94	0.94	0.90	0.94	0.95
High μ_f, Low σ_f	1	1	1	1	1
Low μ_f, High σ_f	0.62	0.61	0.51	0.61	0.67
Low μ_f, Low σ_f	0.72	0.66	0.14	0.33	0.84
No Frictions	0.56	0.55	0.10	0.23	0.95

Empirical Work

- Handel and Kolstad (2015) quantifies risk preferences, information frictions, and health risk

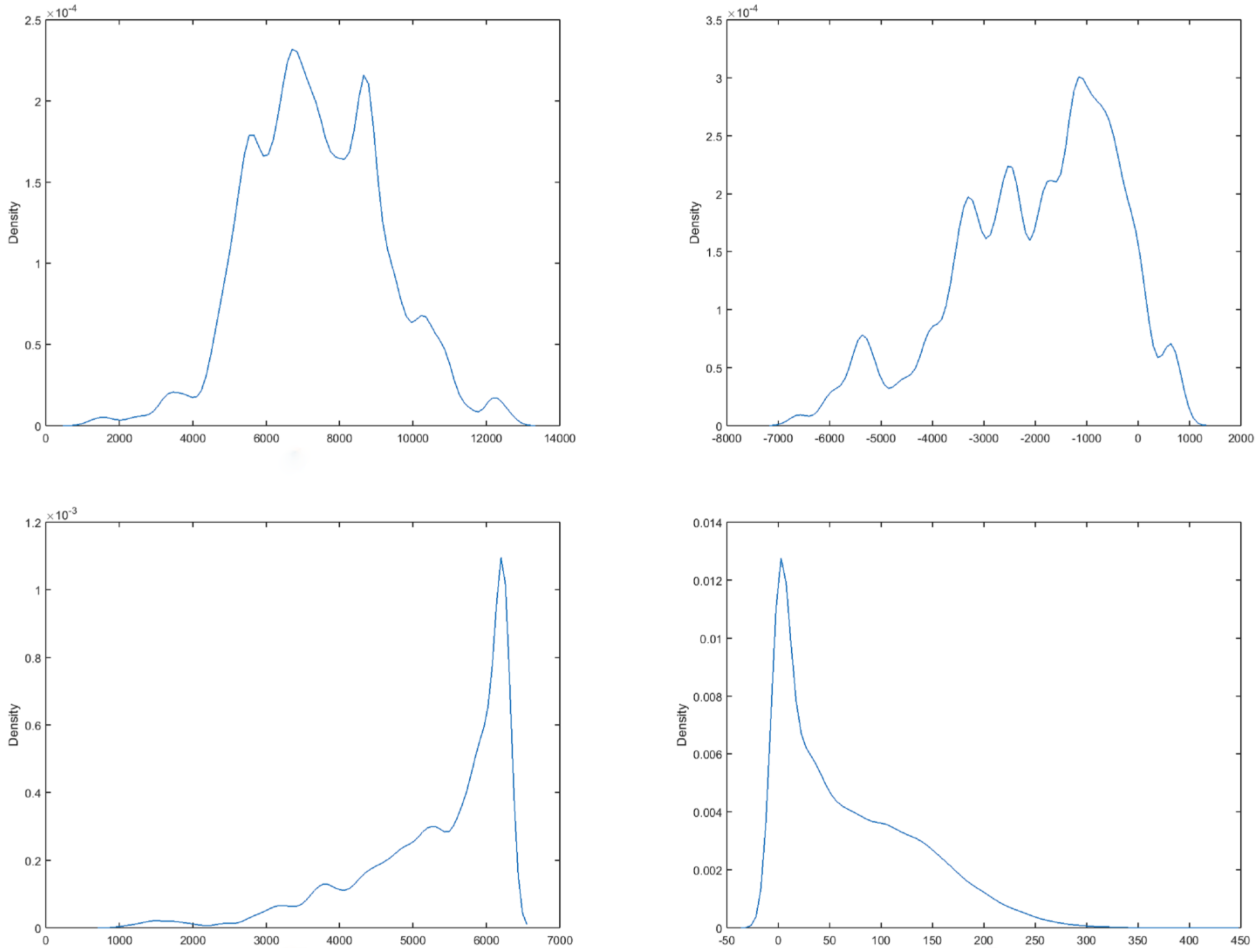
- Our theoretical analysis in HKS suggests that, based on micro-foundations in HK, we should expect friction-reducing policies to be welfare-reducing

- Evaluates following policies:

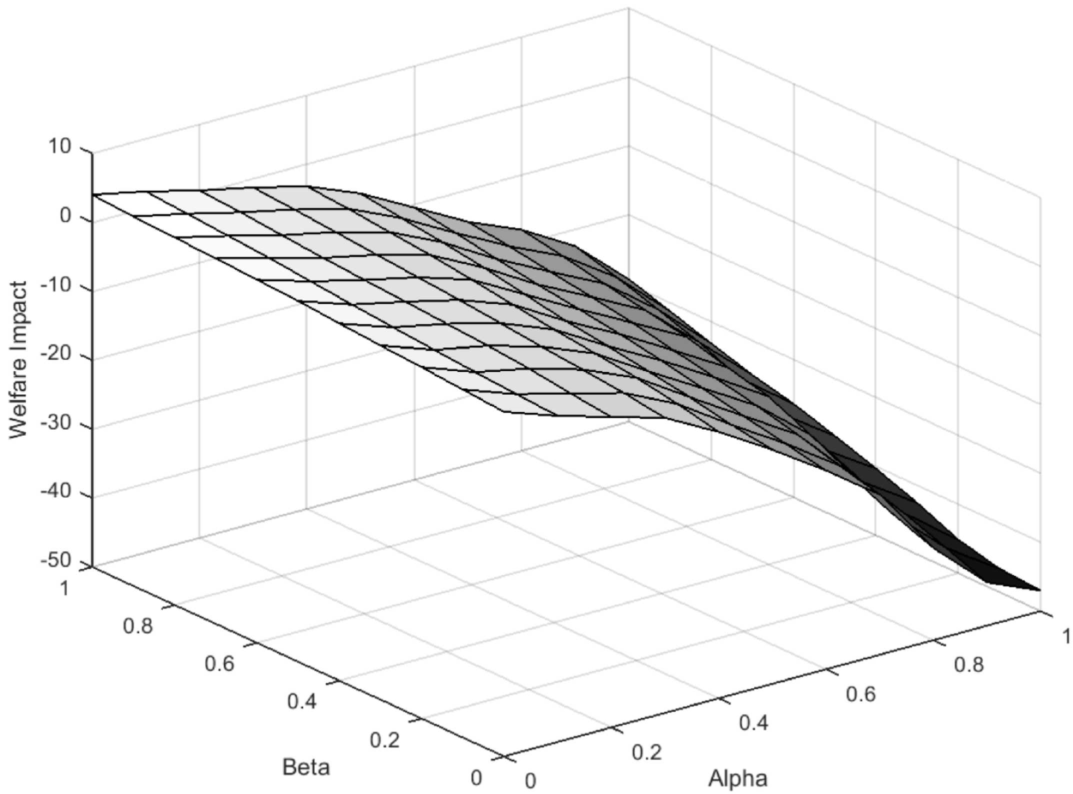
  -- Friction-reducing policies α in range [0,1]

  -- Risk-adjustment policies β in range [0,1]

Empirical Work



Empirical Work: Welfare Impact of Policies



Frictions bias people toward more generous coverage on average in our environment and there is meaningful variance in frictions relative to variance in ex ante expected costs

Lessons

- Characterizes when it is likely that improving choices will reduce / increase welfare in competitive insurance markets

- If costs are big, predictable, and heterogeneous relative to surplus from insurance, reducing frictions is likely to reduce welfare (and vice-versa).

- Supply-side policies like risk-adjustment transfers to prevent adverse selection and complementary to choice improvement policies in the sense that stronger risk-adjustment makes it more likely choice improvement policies are welfare enhancing

Insurance: New Directions

Newer Work: Value of Competition

Newer work by Handel, Holmes, Kolstad and Lavetti (2019) studies potential *value* generated by competition via improved insurance products

Related work in progress by Abaluck et al. for Mediare Advantage

Value of competition in motivating innovative insurance products is primary motivation for exchange instead of public insurance

Little evidence that insurers actually produce innovative, valuable products

Analysis uses Utah APCD and investigates insurer-specific effects on (i) bargaining with providers (ii) provider network formation (iii) consumer steering to providers via prices / other mechanisms (iv) consumer steering to certain kinds of treatments / care paths

Next Steps: Insurance Market Design

1. Interplay between exchange and other markets (Medicaid, employer markets, etc.) or being uninsured

2. Reducing employer tax exemption

3. Impact of targeted / smart default policy

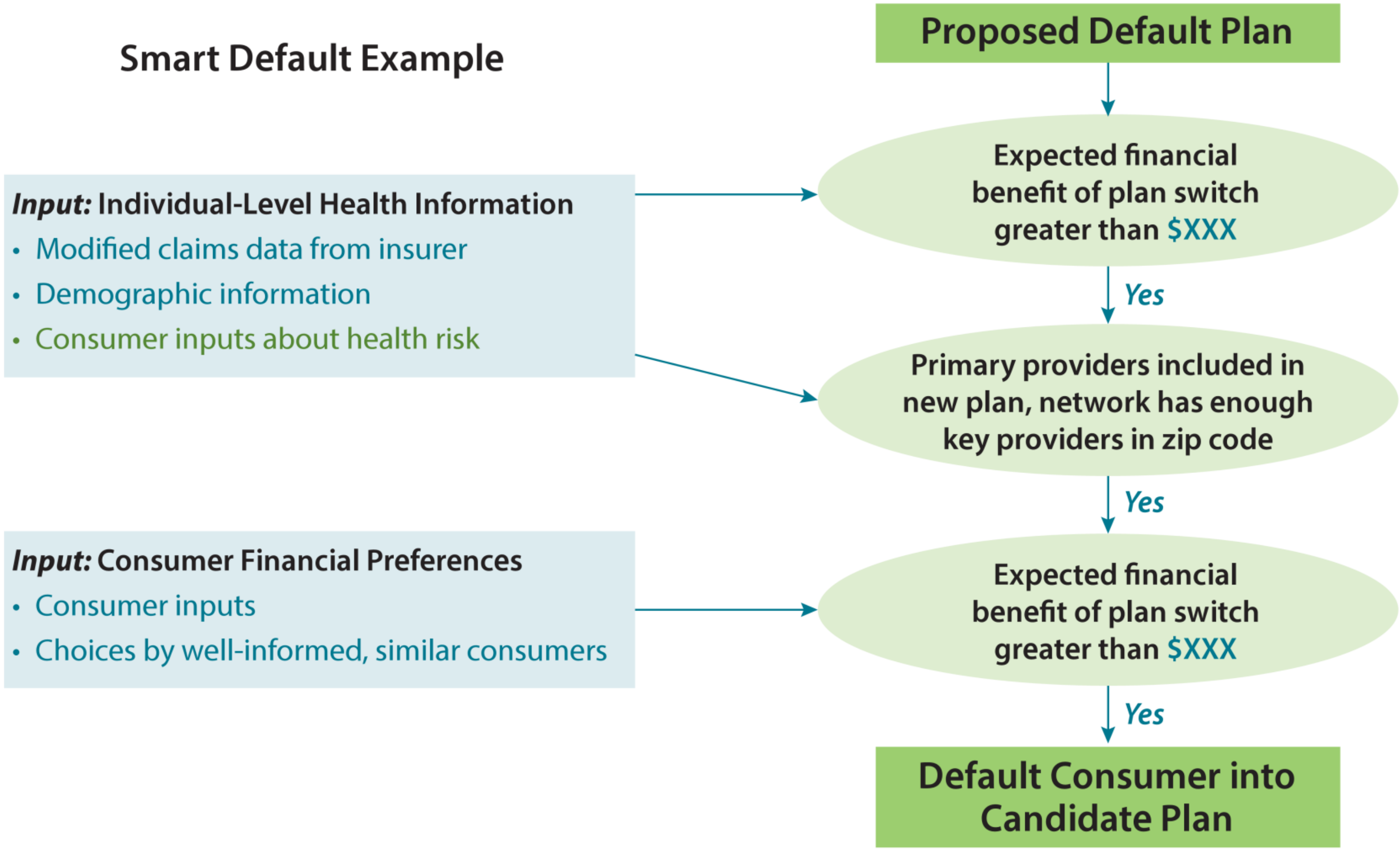
4. Impact of public option in exchange

5. Social determinants of plan choice and relationship to plan choice and equity

6. Different insurer arrangements for curative high-cost drugs

New Analysis: Impact of Smart Default Policy

- Implementation depends crucially on data available and precision of default recommendation effectiveness



Bootcamp Exercise (if time): New Topics

- Form groups of 4, take 15 minutes

- Ask each other: what are topics we haven't covered related to insurance that you would be excited to investigate?

- Could relate to:
  -- Specific applications
  -- Specific methodology for a given topic
  -- Specific economic tradeoffs
  -- Specific new data

- Describe in 5-10 sentences one idea from your small group, to share with the bootcamp

Extra Slides

Cutler and Reber (1998)

- Cutler and Reber (1998) investigates insurance provision by Harvard (who bargains with insurers here) to faculty and staff in the early to mid 1990s

- Papers studies trade-off between:
  - Costs of Adverse Selection
  - Benefits of Competition

- **Policy instrument:** Fixed or proportional subsidy?
  - Fixed Subsidy: Consumers get lump sum of money up front, pay full marginal cost of expensive premium
  - Proportional Subsidy: Consumers get subsidy that varies in proportion to premium of plan chosen

Cutler and Reber (1998)

- Harvard implemented subsidy policy change for 1995
  - Prior to 1995: Proportional subsidy (to some extent)
  - 1995 and after: Fixed subsidy for each plan

- Harvard offered employees 6 different insurance plans during this time period
  - 5 HMOs of varying generosity
  - 1 PPO (Financially Generous, Broad Network)

- Fixed subsidy means that relative consumer premium for most expensive plan, relative to less expensive plan, is simply difference in premiums

$$(P - S) - (P' - S) = P - P'$$

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Cutler and Reber (1998): Death Spiral

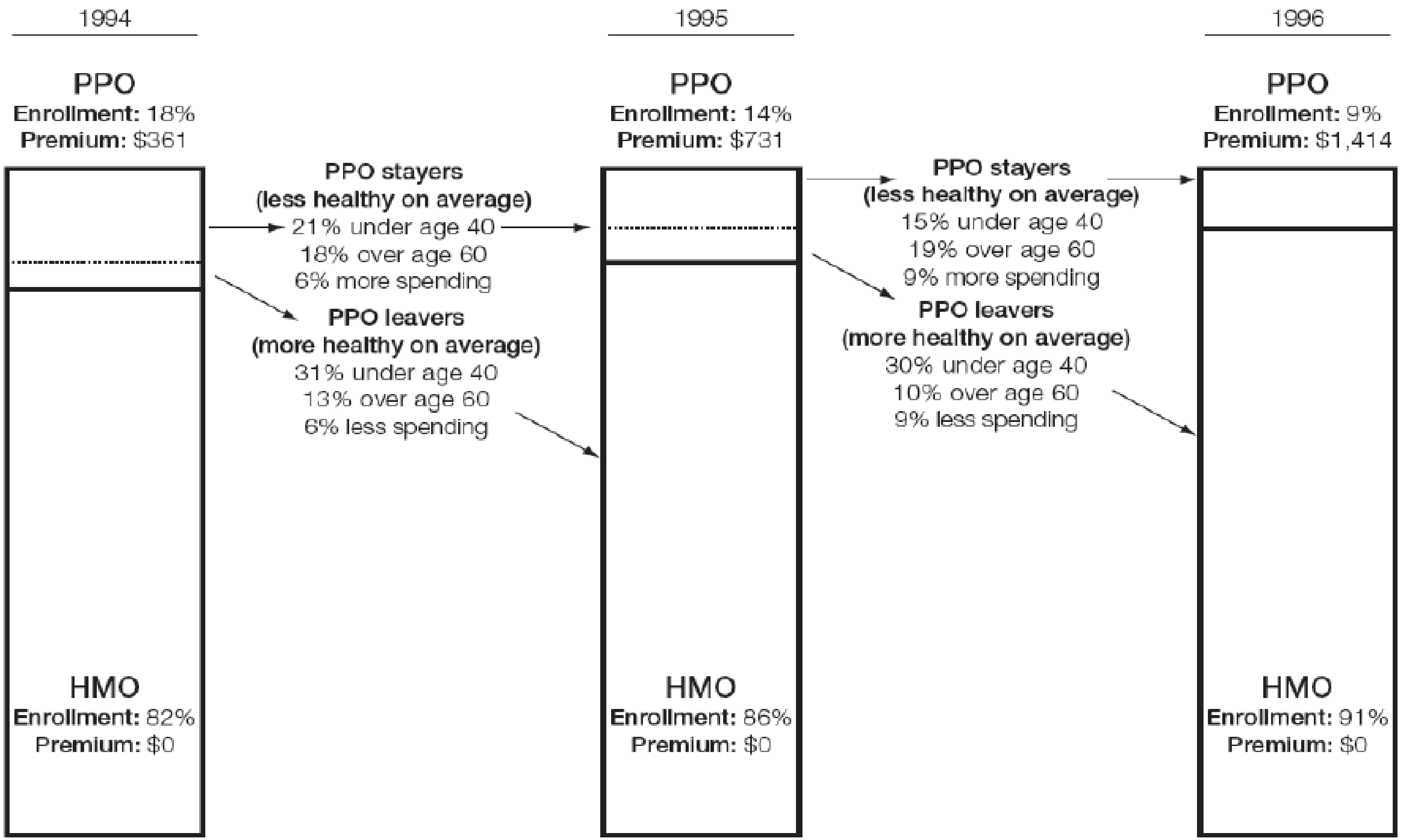

Figure 10.2. *Illustration of the adverse selection death spiral at Harvard.*

Source: Data from Cutler and Zeckhauser (1998).

Cutler and Reber (1998): Wrap Up

- **Adverse Selection Death Spiral:** Welfare loss of 2 to 4% of baseline spending
  -- For consumers who PPO was most efficient plan, welfare loss from exclusion due to high premiums / plan exit

- **Competition:** Authors find that competition reduced total premiums for all plans (weighted average) by 5-8%, benefits from increased insurer competition

- Social welfare impact is negative overall, because adverse selection is social welfare loss, while premium reduction is *transfer* from insurers to Harvard, according to authors.
  -- How could social welfare impact not be negative?