Berkeley Ph.D. IO Slides: Adverse Selection and Inertia in Health Insurance Markets: When Nudging Hurts

Benjamin R. Handel

UC-Berkeley

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Logistics

- Referee Report 2 due this Friday
- Problem Set 1 begin work

Introduction
Adverse Selection & Switching Costs

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- Two potential impediments to efficient health insurance markets:
  1. Switching Costs
  2. Adverse Selection
- Switching costs and adverse selection have each been studied in *isolation* but *interaction* can also be important
- Primary questions:
  - Are switching costs large?
  - Do switching costs significantly impact consumer choices and markets?
  - How does the degree of adverse selection depend on switching costs?
  - What is the welfare impact of reducing switching costs in equilibrium?

What are Switching Costs?

Broad Definition

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1. Transaction costs:
   - Time / hassle costs of actually changing health plan
   - Time / hassle costs of researching alternative options
2. Learning
3. Re-Optimization Cost & Biased Beliefs
   - Realized price change vs. ex ante expectations
   - Collection of complex decisions
4. Status-quo bias / inertia:
   - Persistence can result from deviations from rational behavior
   - Default option
5. Switching providers:
   - **Do not** measure these in my setting

Data and Methods

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- Unique propriety panel data set on consumer health plan choice and utilization from large firm
  1. Natural experiment: Forced re-enrollment into new health plan menu
  2. Detailed medical utilization data
  3. Leads to simple identification of switching costs
- Panel discrete choice model quantifies:
  1. Switching Costs
  2. Ex ante health risk
  3. Heterogeneous risk preferences

Main Results

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1. Large switching costs lead to poor choices as market changes
   - Pattern of 'active' choice
2. Partial equilibrium counterfactual: Policy that reduces switching costs by 75% increases consumer welfare by 6%
3. Full equilibrium counterfactual: Same policy improves choices conditional on prices but exacerbates adverse selection, leading to 8% decrease in consumer welfare.
4. *Doubles* existing welfare loss from adverse selection in observed environment.

Related Literature

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- Switching costs and choice inadequacy:
  1. Farrell & Klemperer (2006)
  2. Dube et al. (2009), Shum (2004), Shcherbakov (2009)
  3. Madrian & Shea (2001), Samuelson & Zeckhauser (1988)
- Adverse selection and/or insurance choice:
  1. Einav et al. (2011), Einav et al. (2009), Carlin & Town (2009)
  2. Levin et al. (2010), Lustig (2009), Cardon & Hendel (2001), Cutler & Reber (1998)
  3. Abaluck & Gruber (2009), Ericson (2011)
  4. Einav et al. (2010), Cutler et al. (2008)

Outline

Motivating Example: Switching Costs

Evidence from Dominated Plan Choice

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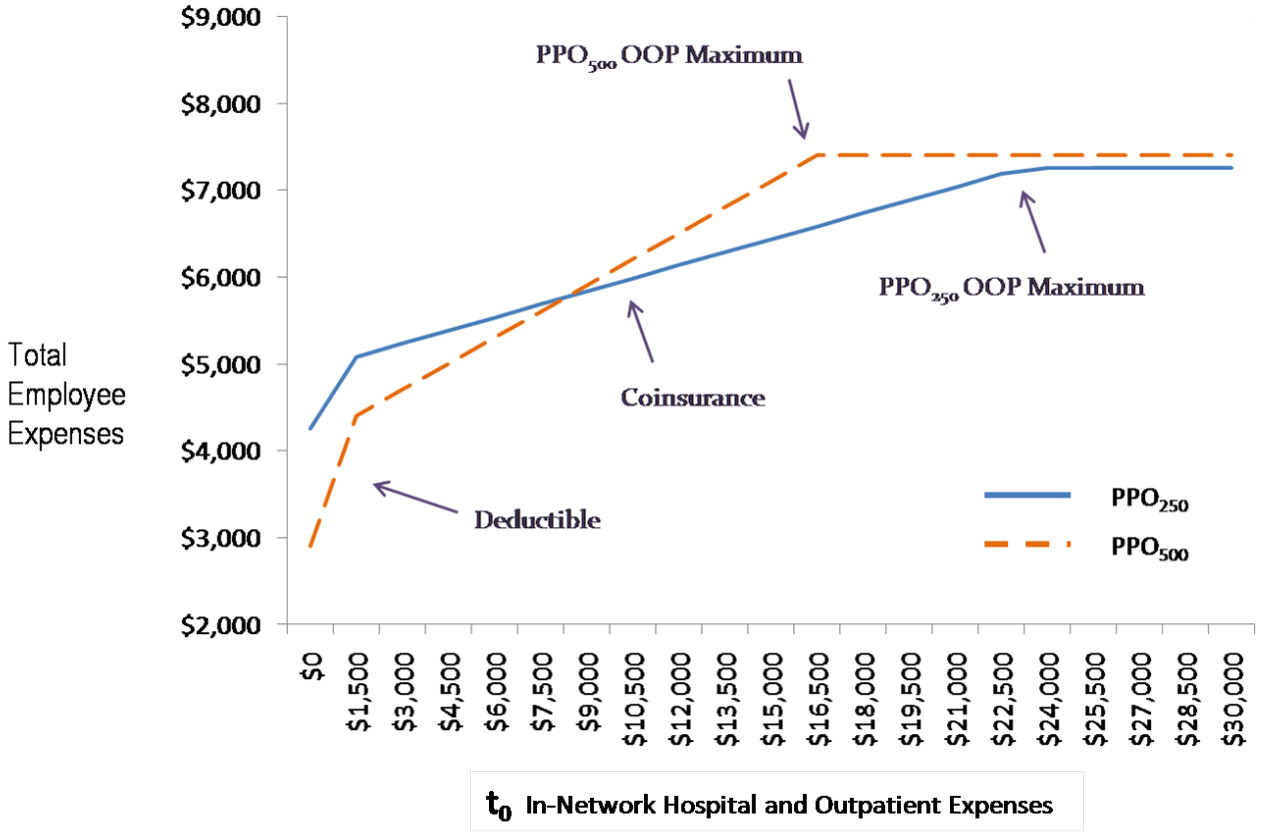

- Sick people should choose more insurance, healthy people less

Motivating Example: Switching Costs

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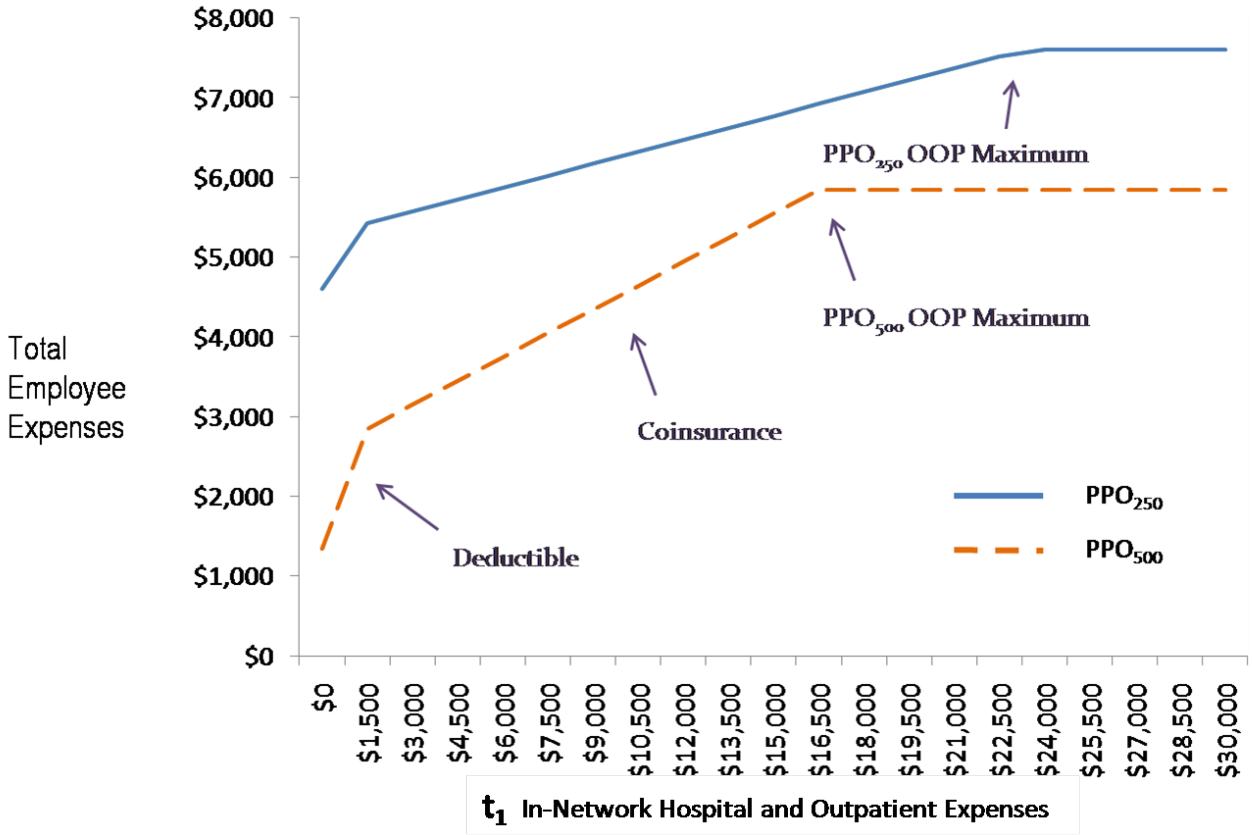

- 30 % of families had plan become completely dominanted over time. 89% of those families continue to choose plan once it is dominated.

Data Overview

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- Individual-level panel dataset provided by large employer ($\approx$ 10,000 employees) from 2004-2009:
  1. Choices: Health, FSA, HSA, dental, vision
  2. Detailed plan characteristics
  3. Demographics: Age, gender, income, family structure, time at firm, advanced degree, quantitative, zip code
- Every claim for every individual and covered dependent in PPO
  1. Medical: Diagnostic code (ICD-9), procedure code (CPT/NDC), provider id, provider specialty
  2. Financial: Total claim, insurer paid, deductible, coinsurance, copayment, claim date, network, pharmacy

Natural Experiment: Menu Change

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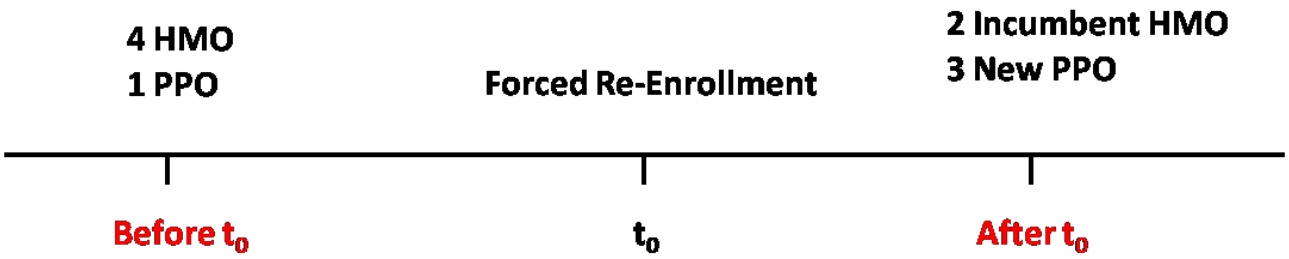
Forced Re-Enrollment



- Forced t_0 re-enrollment:
  - Major initiative at firm to ensure 'active' choice
  - No default option at t_0
  - After t_0, employees have prior choice as default option
- 3 PPO post-t_0 only differentiated financially

Natural Experiment: Menu Change

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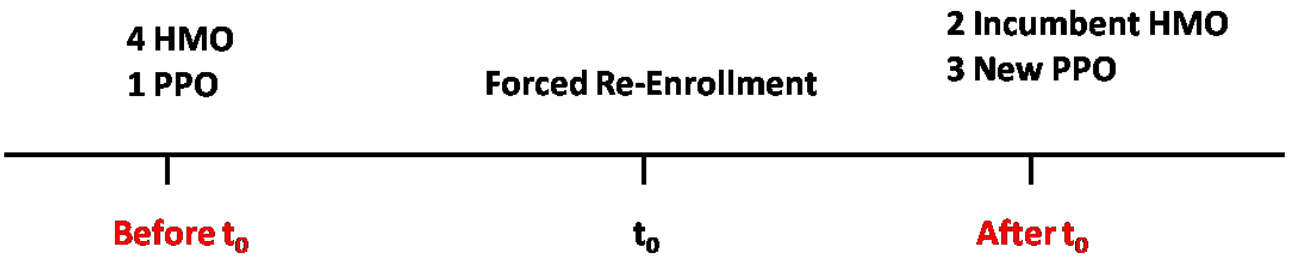

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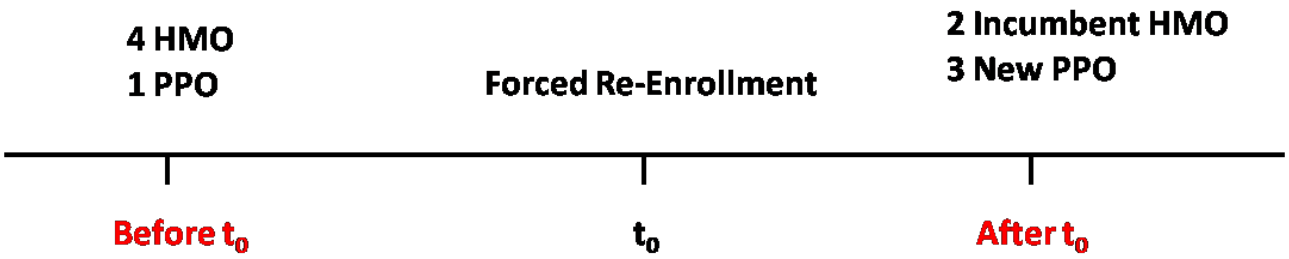

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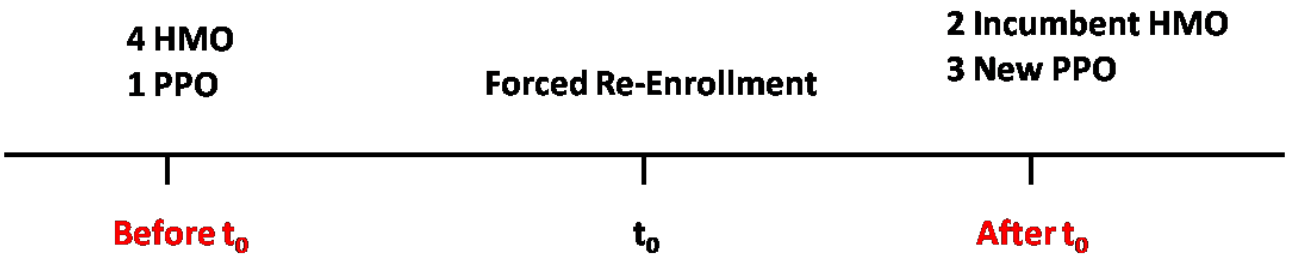

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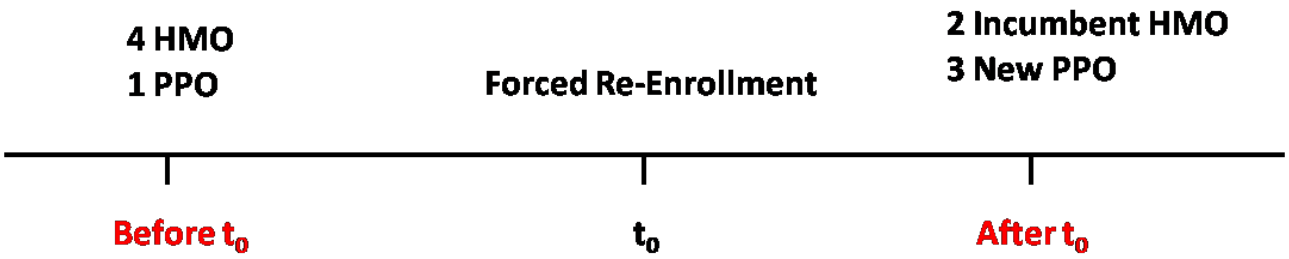

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Plan Characteristics

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	PPO_{250}	PPO_{500}	PPO_{1200}
DEDUCTIBLE	250	500	1200
	(750)	(1500)	(2400)
CO-INSURANCE	10%	20%	20%
PHY. VISIT CO-PAY	25	25	NA
ER CO-PAY	100	100	NA
MENTAL HEALTH CI	50%	50%	50%
PHARMA CO-PAY	5/25/45*	5/25/45*	NA
	(10/50/75)	(10/50/75)	NA
OUT-OF-POCKET MAX			
Inc.Tier 1	1000	1500	2000
	(3000)	(4500)	(6000)
Tier 2/3	2000	3000	4000
	(5000)	(7000)	(8000)
Tier 4/5	3000	4000	5000
	(8000)	(9000)	(10000)

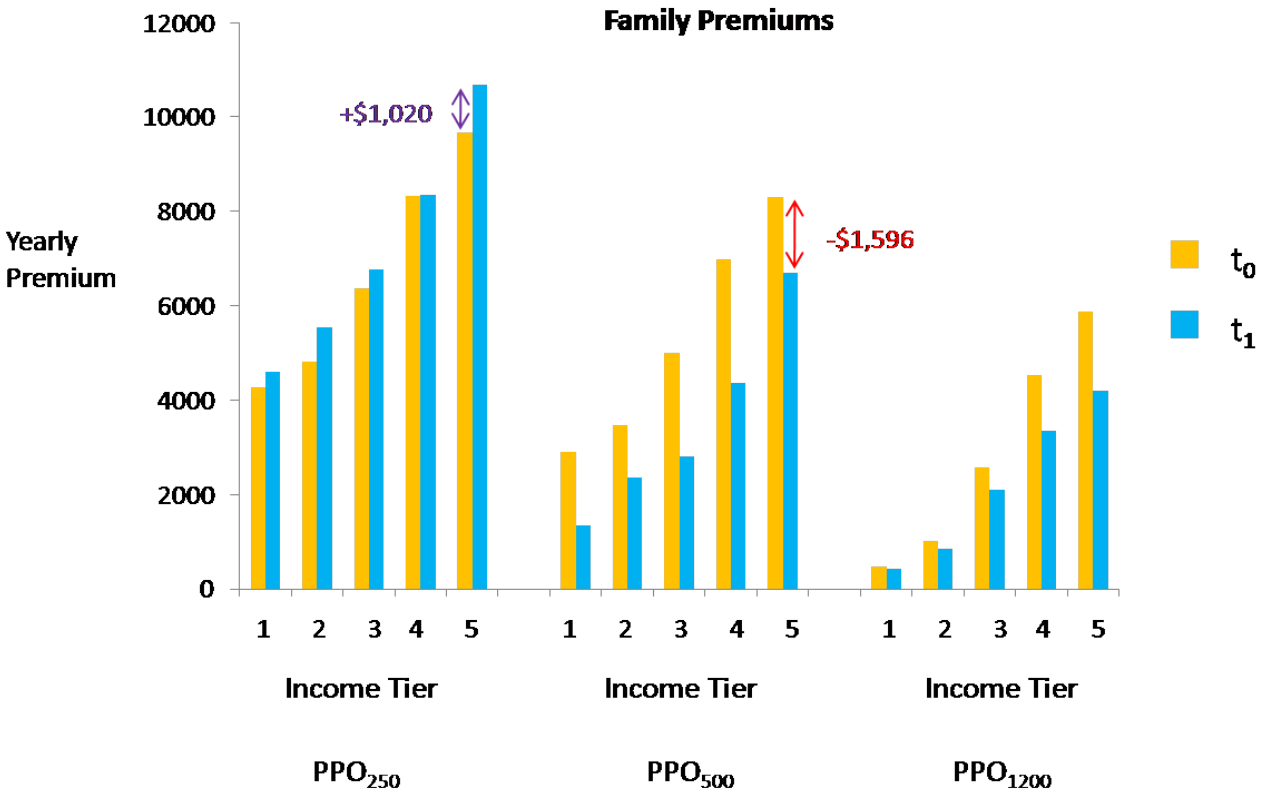
* Perscription Max of 1500 per person

** Out of Network Characteristics not Listed Above

Health Plan Premiums

Large Price Changes

- Premiums depend on covered dependents and income
- Significant price changes for years with a default option



Switching Costs

Evidence From New Entrants

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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

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

Switching Costs

Evidence From New Entrants

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Cohort 1
New Entrants at t_0
N = 1377

	Year t_0	Year t_1
PPO_{250}	**21 %**	**20 %**
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PPO_{1200}	17 %	15 %
HMO_1	20 %	20 %
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Cohort 2
New Entrants at t_1
N = 1305

PPO_{250}	-	**11 %**
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Switching Costs

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

Switching Costs

Evidence From New Entrants

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	Cohort 1 New Entrants at t_0 N = 1377	Cohort 2 New Entrants at t_1 N = 1305
Median age	31	31
Mean age	33	32
Income tier 1	50 %	47 %
Income tier 2	31 %	32 %
Income tier 3	10 %	12 %
Income tier 4	4 %	4 %
Income tier 5	5 %	5%

Pattern of Active Choice

Multiple Decision Analysis

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	PPO_{250} Switchers	PPO_{250} Stayers	All Switchers	All Stayers
Sample Size	174	1626	384	2786
FSA 2008 Enrollee	41%	31%	39%	25%
Dental Switch	13.1%	3.2%	14.5%	3.8%
Mean Income Tier	2.2	2.5	2.1	2.3
Quantitative Manager	17%	20%	14%	17%
Mean Age	40.6	48.3	39.1	44.0
Single	56%	50%	59%	53%

- FSA choice is back to zero default

Sample Composition

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- Only consider choice among PPO options
  - Benefit: Observe detailed medical data
  - Cost: Potential for selection bias
  - Benefit and Cost: Switching costs exclude costs of changing providers
- Restriction that employee continuously enrolled over 3 years t_{-1} through t_2
  - Benefit: Past year of medical data for all choices
  - Cost: Specific population not necessarily representative
  - Cost: Lose 'new entrant' population

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Summary Statistics

Sample Demographics

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	All Employees	PPO Ever 04-09	Final Sample
EMPLOYEES	11,253	5,667	2,023
GENDER (MALE %)	47.4%	45.9%	48.5%
AGE	39.9	39.9	46
	(37)	(37)	(46)
INCOME			
Tier 1	31.3%	31.7%	20.3%
Tier 2	36.6%	39.4%	41.4%
Tier 3	17.3%	18.5%	23.9%
Tier 4	6.5%	5.6%	7.5%
Tier 5	8.3%	4.8%	6.9%
FAMILY SIZE			
1	59.9 %	57.1 %	44.5 %
2	15.5 %	18.4 %	21.2 %
3	10.4 %	10.7 %	13.9 %
4+	14.2 %	13.8 %	27.9 %
STAFF GROUPING			
MANAGER	25.7%	24.3%	34.3%
WHITE-COLLAR	46.1%	47.5%	43.1%
BLUE-COLLAR	28.3%	27.9%	21.7%

Adverse Selection

Evidence of significant adverse selection against PPO_{250}

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	N	Mean Fam Size	Mean	25th pct	Median	75th pct
PPO_{-1}	2022	2.24	13331	1257	4916	13022
PPO_{250} t_0	1328	2.18	16976	2041	6628	16135
PPO_{500} t_0	338	2.20	6151	554	2244	6989
PPO_{1200} t_0	280	2.53	6742	658	2958	8073
PPO_{250} t_1	1244	2.19	17270	2041	6651	16707
PPO_{500} t_1	461	2.19	7759	708	2659	8588
PPO_{1200} t_1	232	2.57	6008	589	2815	7191

- Table uses t_{-1} claims levels in all years

Choice Framework

Realized Utility Model

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- Model to quantify switching costs and their welfare impact in environment with adverse selection
  - Data alone provide evidence of large switching costs
- Panel discrete choice model from t_0 to t_2 quantifies:
  1. Switching costs
  2. Ex ante health risk
  3. Heterogeneous risk preferences
- Explicit estimates of expected-utility function parameters
- Simple supply-side pricing model

Consumer Expected Utility

Consumer Beliefs

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- Each family k has uncertainty $F_{kjt}(OOP)$ about future health expenditures for plan j at the time t of plan choice
- Consumers maximize expected utility over set of plans J:

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

- Estimate $\widehat{F_{kjt}(OOP)}$ derived from separate cost model
- Consumer expenditure beliefs conform to $\widehat{F_{kjt}(OOP)}$

Empirical Setup
CARA

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- Consumers have constant absolute risk aversion (CARA) utility index:

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

$$m_j = W_{kt} - P_{kjt} + \eta(X_k^B)\mathbf{1}_{j=j-1} + \delta_k(Y_k)\mathbf{1}_{PPO_{1200}} + a_j H_k + \epsilon_{kjt}(Y_k)$$

- W_{kt} – wealth, P_{kjt} – premium, η – switching cost, δ_k – CDHP preference, X_k – demographics, Y_k – family status, a_j – high-cost heuristic, H_k high-cost indicator

- Empirical utility:

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

Cost Model

Estimating F_{kjt}

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- Cost model separate from choice model:
  - Assumption: No private information or moral hazard
  - Based on data analysis
  - Robustness check

▸ Details

- Estimate $F_{kjt}(\widehat{OOP})$ is information set at time of plan choice.
  - Incorporates past year of medical information with ACG software
  - Consumer could have more or less information than F_{kjt}
- Potential sources of private inforamtion:
  1. Pregnancy
  2. Condition Intensity
  3. Genetic predisposition
  4. Robustness check

Cost Model II

Outline of Methods

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- ACG software predicts future expenditures θ using past medical information ξ and demographics ζ:

$$A : \xi \times \zeta \rightarrow \theta$$

- Divide claims into four distinct categories $c \in C$
- Group individuals into ex ante risk cells for each c
  - Estimate joint distribution over C with ex post data
- Plan-specific out-of-pocket expenditure mapping:

$$\Omega_j : C \rightarrow OOP_j$$

- Incorporate family-level restrictions

Claim Levels by Category

	PPO_{-1}	PPO_{250}	PPO_{500}	PPO_{1200}
Pharmacy				
Mean	$973	$1420	$586	$388
Median	$81	$246	$72	$22
Mental Health (>0)				
Mean	$2401	$2228	$1744	$2134
Median	$1260	$1211	$1243	$924
Hospital / Physician				
Mean	$4588	$5772	$2537	$2722
Median	$428	$717	$255	$366
Physician OV				
Mean	$461	$571	$381	$223
Median	$278	$356	$226	$120

Choice Model

Unobserved Heterogeneity

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- Risk preferences normally distributed conditional on demographics X_k:

$$\gamma_k(X_k) \Rightarrow N(\mu_\gamma(X_k))$$
$$\mu_\gamma(X_k) = \mu_0 + \beta X_k$$

- Other assumptions:
  - δ_k normally distributed $N(\mu_\delta(Y_k), \sigma^2_\delta(Y_k))$
  - ϵ_j normally distribued $N(0, \sigma^2_{\epsilon_j}(Y_k))$

Model Identification

Menu Change

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- Menu change w/ no default allows observation of same consumers in periods with and without switching costs
- Unobserved heterogeneity:
  - Same within each consumer over time
  - Population distribution same over time
- Switching Costs vs. Unobserved Heterogeneity:
  - Switching costs shifts choices only t_1 and after
  - Unobserved Heterogeneity shifts choices in all periods
  - Combination of initial choice, panel, detailed medical/cost data, and network homogeneity
- Risk Prefernce vs. PPO_{1200} intercept:
  - γ determines choices between all plans
  - δ determines choices between PPO_{1200} and other two

Robustness

Alternative Specifications

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1. Basic specification with no detailed demographics linked to switching costs and risk preferences
2. Moral Hazard:
   - Simple framework to check if price sensitivity substantially impacts switching cost and risk preference estimates.
   - Assume high end of price elasticity estimated in literature.
   - Assume MH manifests as reduction of purely wasteful services.
3. Log-normal risk preferences
4. No idiosyncratic error ϵ (similar to EFRSC 2011)

Estimation

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- Simulated maximum likelihood for choice sequence starting at t_0 for each k
- Optimization: Maximize probability of choices in data with respect to model parameters
  - Simulate draws from F_{kjt}
  - Simulate draws from preference random coefficients
  - Normalization of ϵ and U_{kjt}
  - Smoothed Accept-Reject of each sequence for given paramaters
- Robustness: Utility function, unobserved heterogeneity

Estimation

▸ Skip slide

- Simulated maximum likelihood
- Q draws from each F_{kjt}
- Z draws of preferences conditional on parameters:

$$\theta \equiv (\mu, \beta, \sigma_\gamma, \mu_\delta(Y_k), \sigma_\delta(Y_k), \alpha_j(Y_k), \sigma_{\epsilon_j}, \eta(Y_k)).$$

- Smoothed Accept-Reject for each choice given θ

$$Pr(j = j^*) = \frac{(\frac{\frac{1}{-U_{kj^*t}}(\cdot)}{\Sigma_J \frac{1}{-U_{kjt}}(\cdot)})^\tau}{\Sigma_{\hat{j}}(\frac{\frac{1}{-U_{k\hat{j}t}}(\cdot)}{\Sigma_J \frac{1}{-U_{kjt}}(\cdot)})^\tau}$$

- Maximize probability that predicted choice *sequences* $\hat{P}_k^{j^3}$ match actual ones d_{kj^3}:

$$SLL(\theta) = \Sigma_{k \in K} \Sigma_{j^3 \in J^3} d_{kj^3} ln \hat{P}_k^{j^3}$$

Results
Large Switching Costs

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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)	$1.04 * 10^{-4}$ $5.9 * 10^{-5}$

Results II

Interpretation of Risk Parameters

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	Absolute Risk Aversion	Interpretation
Normal Heterogeneity		
Mean / Median Individual	$4.22 * 10^{-4}$	94.6
25th percentile	$2.95 * 10^{-4}$	96.1
75th percentile	$5.49 * 10^{-4}$	93.8
95th percentile	$7.31 * 10^{-4}$	92.2
99th percentile	$8.59 * 10^{-4}$	91.8
Log normal Heterogeneity		
Mean	$9.82 * 10^{-4}$	91.0
25th percentile	$1.53 * 10^{-4}$	97.2
Median	$3.85 * 10^{-4}$	95.0
75th percentile	$9.72 * 10^{-4}$	91.1
95th percentile	$3.70 * 10^{-3}$	72.8
99th percentile	$9.30 * 10^{-3}$	51.1
Comparable Estimates		
Cohen-Einav (2007) Benchmark Mean	$3.1 * 10^{-3}$	76.5
Cohen-Einav (2007) Benchmark Median	$3.4 * 10^{-5}$	99.7
Gertner (1993)	$3.1 * 10^{-4}$	97.0
Holt & Laury (2002)	$3.2 * 10^{-2}$	21.0
Sydnor (2006)	$2.0 * 10^{-3}$	83.3

Counterfactual Analysis

Reduction in Switching Costs

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- Investigate counterfactual environment with reduced switching costs
- Price-conscious consumer choice is cornerstone of:
  - National insurance reform: health insurance exchanges
  - Large employer purchasing strategies
- Policies to reduce switching costs:
  1. Personalized plan recommendations
  2. Decision making tools
  3. Standardized /simple benefit representation
  4. Choice framing
  5. Strong oversight body for all consumer decision issues

'Naive' Analysis

Holding Prices Fixed

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- Similar to previous analyses studying choice inadequacy
  - Consumer welfare can only increase
- Switching costs reduced to $Z\eta_k$:

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

- Choose plan to maximize expected utility in each t
- Use certainty equivalent metric to quantify welfare change

'Naive' Pricing Policy Impact

Market Share Changes

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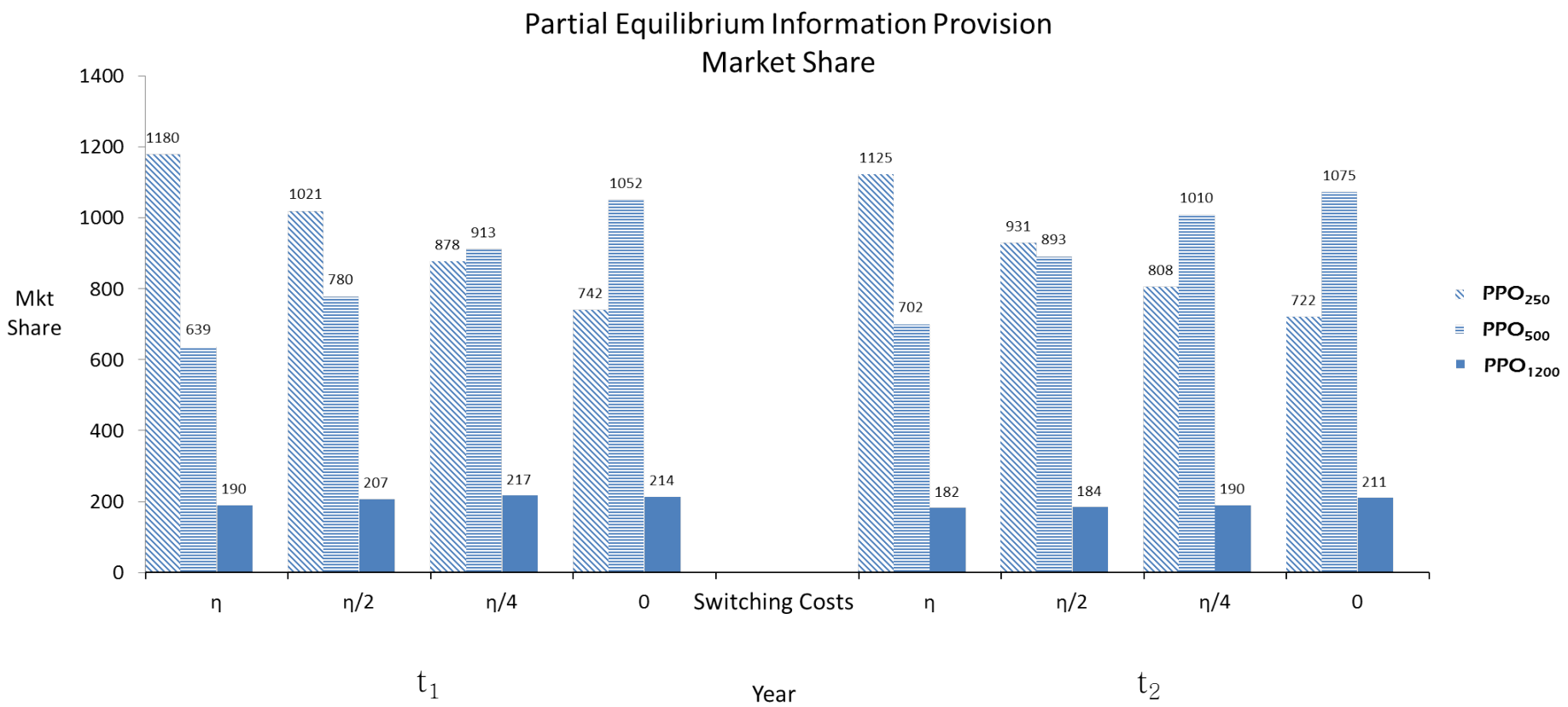

'Naive' Pricing Policy Impact

Average Cost Changes

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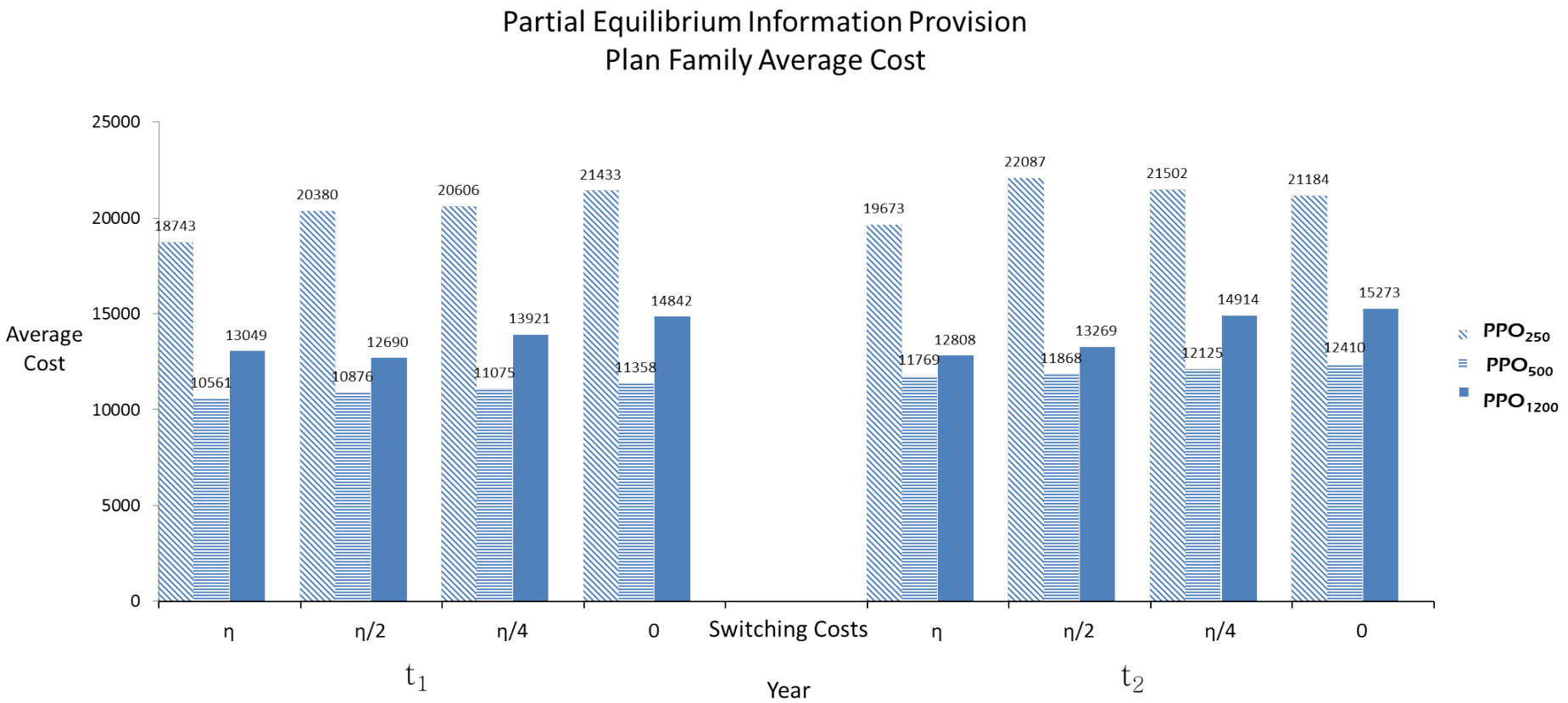

Welfare Analysis

Tangible Costs?

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- Certainty equivalent Q_{kjt} makes consumer indifferent between certain Q_{kjt} and risky payoff from j
  - Q calculated *net* of switching costs (depends on *source*)
  - Denote Q for choice with policy Z as Q^Z_{kjt}
- κ portion of switching costs that are tangible welfare loss

$$\begin{aligned} u(Q^{\kappa}_{kjt}) &= -\frac{1}{\gamma_k(X^A_k)} e^{-\gamma_k(X^A_k)(W - Q^{\kappa}_{kjt})} \\ &= U_{kjt}(P_{kjt}, \kappa Z \eta_k, \mathbf{1}_{kj,t-1}) \end{aligned}$$

Welfare Analysis

Population Metric

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- Individual level consumer welfare impact:

$$\Delta CS_{kjt} = Q^{Z}_{kjZt} - Q_{kjt}$$

- Mean welfare change:

$$\Delta TS^{Z}_{t} = \frac{1}{\|K\|}\Sigma_k \ \Delta CS^{Z}_{kjt} + \frac{1}{\|K\|}\Sigma_k \ (P^{Z}_{kjt} - P_{kjt})$$

- Population welfare change comes from risk preference matching

'Naive' Policy Welfare Impact

$z = .25$

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	t_1	t_2
Mean Δ CEQ		
Population	\$96	\$114
Switchers Only	\$175	\$196
Mean Welfare Change: % Total Premiums		
Mean Employee Premium (MEP)	\$2,067	\$1,954
Welfare Change Population	4.6%	5.8%
Welfare Change Switchers	8.5%	10.0%
Mean Welfare Change: % Total Emp. Spending		
Mean Total Emp. Spending	\$4,373	\$4,486
Welfare Change Population	2.2%	2.5%
Welfare Change Switchers	4.0%	4.4%

Full Re-Pricing Analysis

Endogenous Insurance Pricing

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- Insurance prices adjust along with new choices for $Z < 1$
- Recreate exact pricing rule
  - Close to prior work, resembles common pricing environments
- Start at given prices p_0
- Total premium lagged average cost:

$$TP_{jt}^{y} = AC_{K_{j,t-1}^{y}} + L$$

- Firm gives subsidy for all j as % of PPO_{1200} premium:

$$P_{kjt} = TP_{jt}^{y} - S(X_k)\, TP_{PPO_{1200}\, t}^{y}$$

Impact of Policy on Market Share

Death Spiral?

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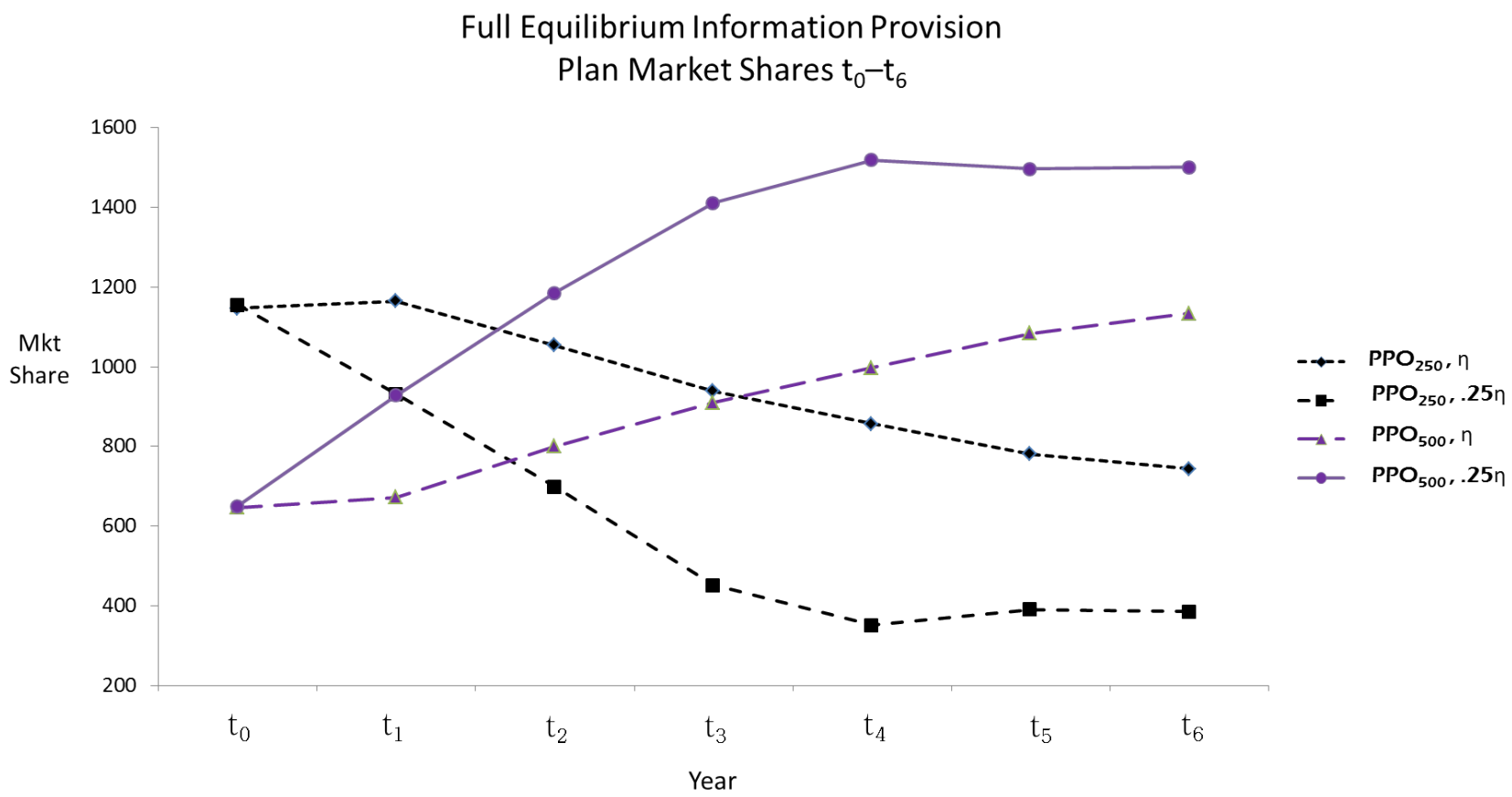

Impact on Plan Prices

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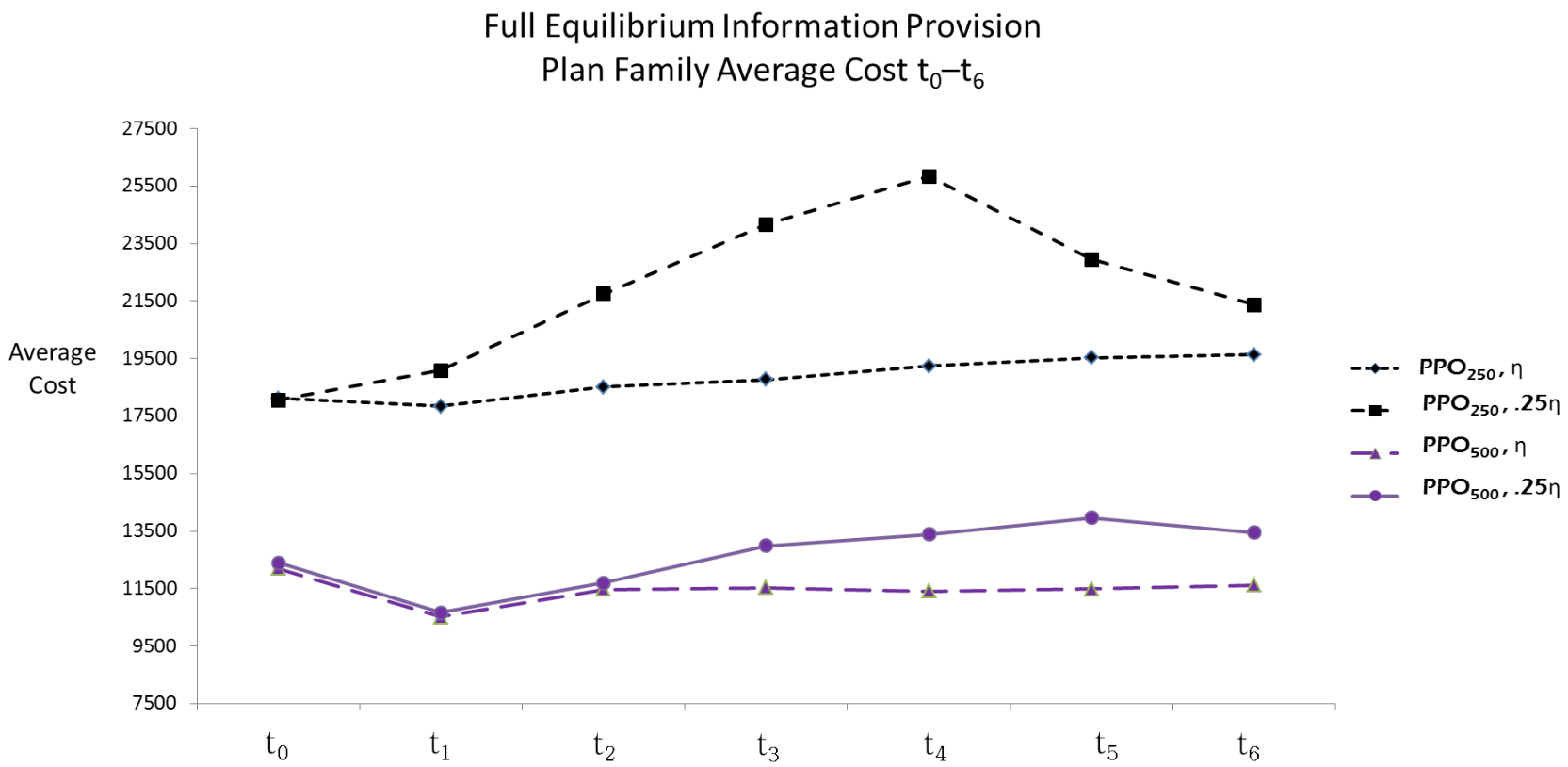

▸ Average Cost

Full Equilibrium Welfare Impact

When Nudging Hurts.....

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	t_1	t_2	t_4	t_6	**Avg.** t_1-t_6
Mean Δ CEQ					
Population	-$63	-$104	-$144	-$118	-$115
Switcher Pop. %	51%	49%	48%	53%	49%
Switchers Only	$86	$175	$ 245	$242	$186
Non-Switchers Only	-$205	-$391	-$555	-$432	-$442
Welfare Change: % Premiums					
Mean Employee Premium	$1,471	$1,591	$1,455	$1,259	$1,500
Welfare Change Population	-4.8%	-6.5%	-9.9%	-9.4%	-7.7%
Welfare Change Switchers	5.6%	11.0%	16.9%	19.2%	12.4%
Welfare Change Non-Switchers	-13.9%	-24.6%	-38.1%	-34.3%	-29.4%
Welfare Change: % Total Spending					
Mean Total Emp. Spending	$3,755	$4,097	$4,022	$3,862	$4,015
Welfare Change Population	-1.7%	-2.5%	-3.6%	-3.06%	-2.9%
Welfare Change Switchers	2.3%	4.3%	6.1%	6.3%	4.6%
Welfare Change Non-Switchers	-5.5%	-9.5%	-13.8%	-11.2%	-11.0%

▸ More

Full Equilibrium Welfare Impact

Policy Effectiveness & First Best

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	First-Best	Baseline	.75η	.5η	.25η	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%)

Full Equilibrium Welfare Impact

▸ Skip slide

Tangible Switching Costs κ

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%)

Conclusions I
Policy Implications

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- **Individual Allocation:**
  - Substantial choice frictions ⇒ Substantial scope to improve individual plan choice
  - Additional trade-off with de-regulation (Part D?): firm market power vs. adverse selection
- **Health Market Design:**
  - National Health Exchanges and Large Employer Settings
  - Even conditional on improving choices: policies to improve consumer choices and combat adverse selection should not be independent
  - In certain cases, tools/policies to improve decisions can have significant negative welfare impact
  - Contract characteristics, subsidy policy, choice framing
  - Distribution of welfare can be significantly affected

Conclusions II

▸ Skip slide

- Evidence of large switching costs
  - What are the sources?
- Link between switching costs and adverse selection
  - Large welfare impact
  - Impact relative to observed adverse selection welfare loss
  - Policy implications
  - Sophisticated firm pricing models?
- Second-best analysis with choice inadequacy issues
- A few more things to think about:
  - Test of dynamic choice / forward-looking consumers
  - Pricing regulation, adverse selection, and re-classification risk
- **Discussion of Handel / Kolstad (2013)**