

Consumer Inertia and Firm Pricing in the Medicare Part D Prescription Drug Insurance Exchange

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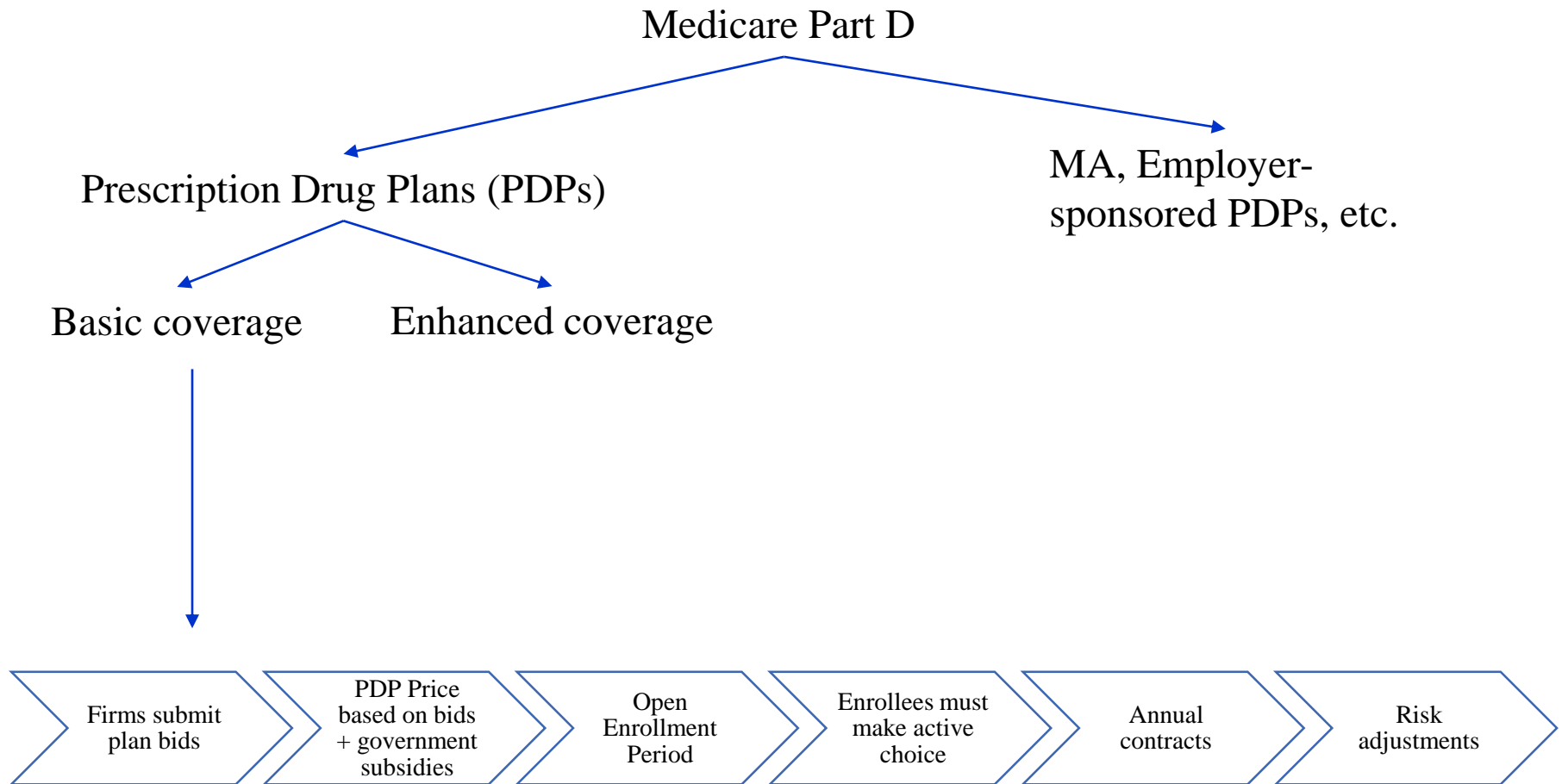
Motivation

- Medicare Part D receives ~ \$40B annually & covers ~24M people (2008)
 - ~\$80B and ~45M people in 2020 (KFF)
- In the presence of inertia, random variations in initial conditions will have persistent effects
 - Firm responses to inertia → Market inefficiencies
 - Parallel to introductory offers
- Part D as a model for ACA individual exchanges

Research Question

- Is there inertia in the Medicare Part D market?
- Do firms respond to inertia by raising prices on existing enrollees?

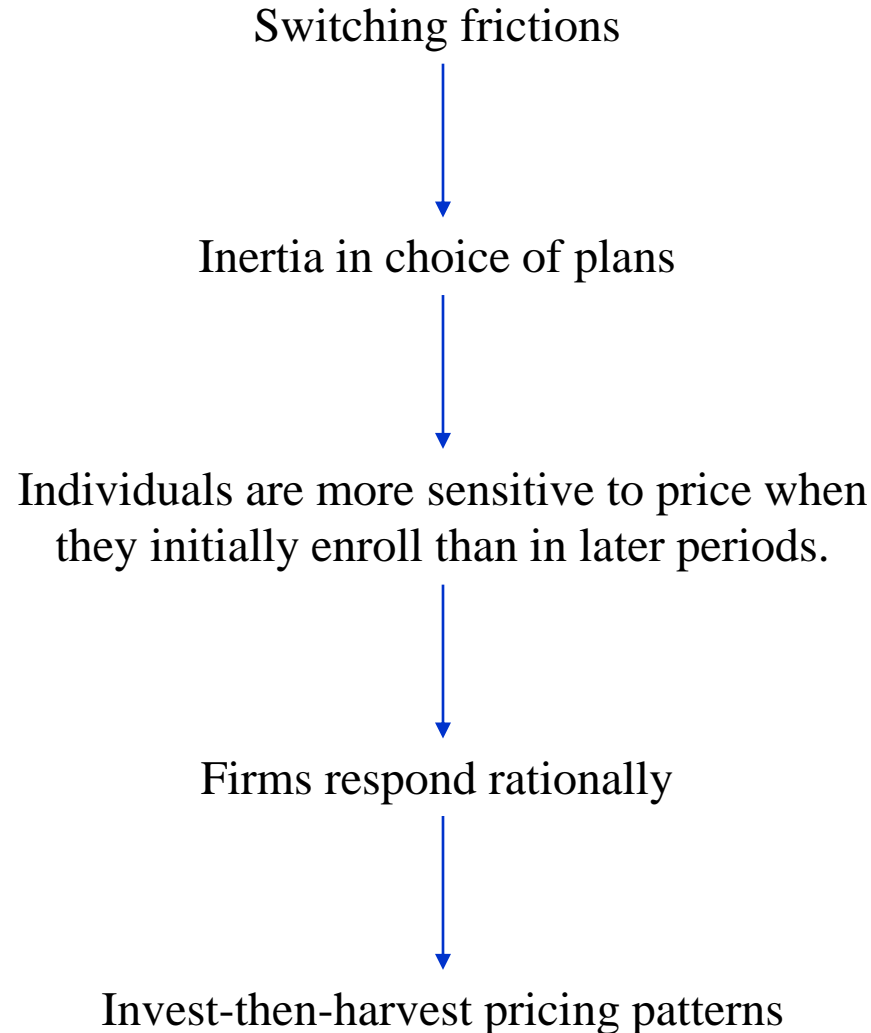
Medicare Part D Market Overview



Medicare Part D Market LIS Program

- Low Income Subsidy (LIS) Program
- 52% of PDP Market in 2006, 41% in 2009
- LIS enrollees pay premium-benchmark
 - 0 if premium < benchmark
- Automatic enrollment into plans selected at random from those < price benchmark
 - Benchmark is unknown to insurers
 - Enrollees receive subsidies + reduced cost-sharing
 - Automatic switching
- De minimis policy 2007-2008

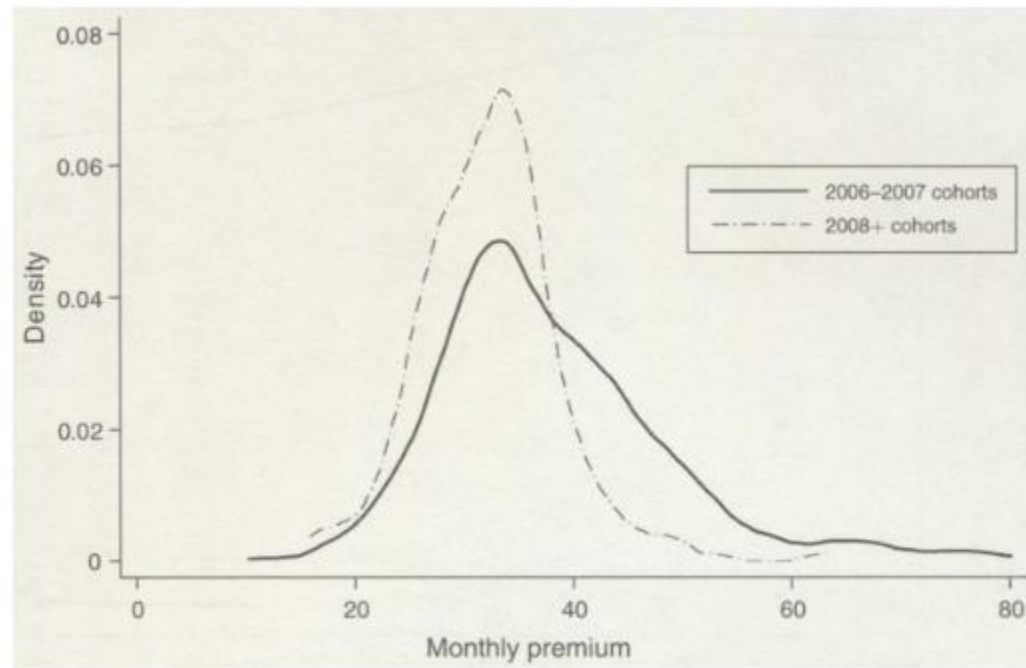
Theory & Hypothesis



Preview of findings

- Firms initially set low prices for newly introduced plans, but then raise prices as plans age while new low cost plans are introduced each year.
- Older plans premiums are 10% (\$50) higher than newly introduced plans
- This implies that the elasticities estimated from enrollees are essentially uninformative about true long run elasticity

Older Plans Have a Larger Tail of Higher Premiums



**FIGURE 1. DISTRIBUTION OF BASIC PDP PLAN PREMIUMS IN 2010,
BY YEAR OF PLAN INTRODUCTION**

Older Plans Have More Enrollees

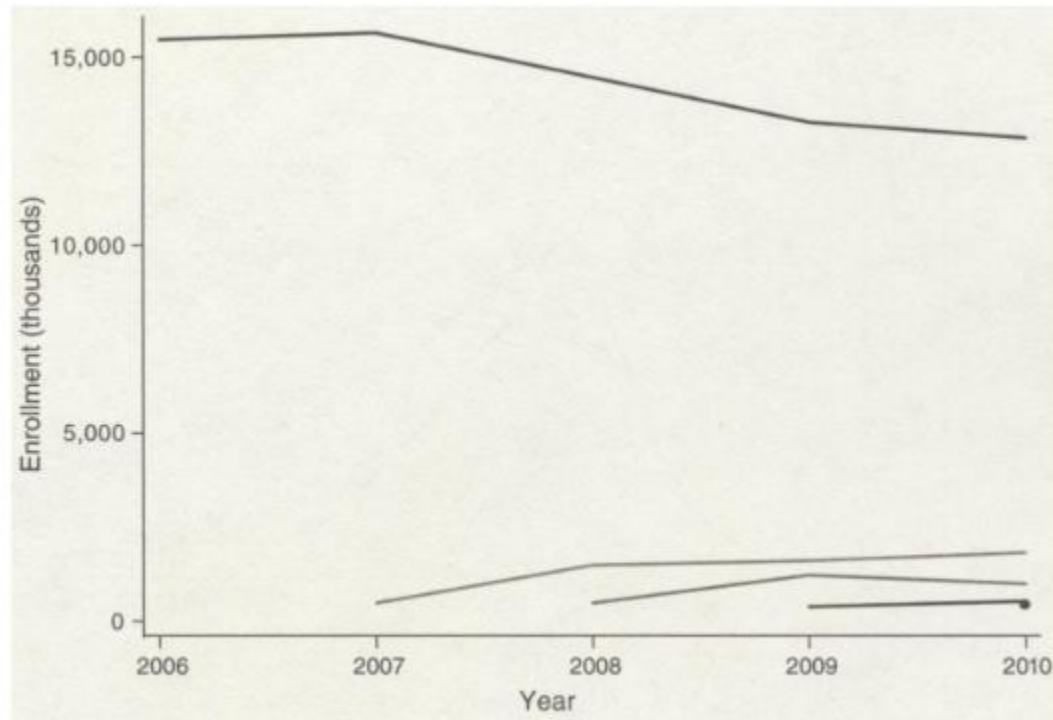


FIGURE 2. TOTAL PDP ENROLLMENT, BY YEAR AND COHORT OF PLAN

Data Sources

- CMS Data
 - Spanning 2006-2010
 - Plan premiums
 - Characteristics (deductible, benefit type, plan name)
 - Aggregate enrollment

Identification Strategy (1)

- Correlation between Enrollment and Past Prices
- OLS Regression using non-LIS enrollment data

$$\ln s_{jtm} = x_{jtm} \beta_1 + \alpha_1 p_{jtm} + x_{jt-1m} \beta_2 + \alpha_2 p_{jt-1m} + v_{tm}$$

Where:

- $\ln s_{jtm}$ is log market share in market m at time t
- p_{jtm} is plan premium
- x_{jtm} contains plan characteristics
- v_{tm} contains state fixed effects
- p_{jt-1m} is the lagged price

Results (1)

- Past prices strongly predict enrollment

TABLE 2—RESPONSE OF ENROLLMENT TO CONTEMPORANEOUS AND PAST PRICES: 2007

	$\ln s_{2007}$ (1)	$\ln s_{2007}$ (2)	$\ln s_{2006}$ (3)	$\ln s_{2007}$ (4)	$\ln s_{2007}$ (5)	$\ln s_{2006}$ (6)
Premium in 2007	−0.0971*** (0.0308)	−0.146*** (0.0447)		−0.0899*** (0.0285)	−0.105*** (0.0335)	
Premium in 2006	−0.0773*** (0.0185)		−0.140*** (0.0281)	−0.0694*** (0.0222)		−0.173*** (0.0254)
Type of basic plan	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	No	Yes	Yes	Yes
Observations	560	560	553	560	560	553
R^2	0.648	0.484	0.552	0.827	0.800	0.757

Identification Strategy (2)

- Regression Discontinuity Design (RDD)
 - Older cohorts (pre): 2006-2007
 - Newer cohorts (post): 2008 <
 - Compares just above & just below benchmark plans in 2006
- Benchmark is not known ex ante
 - Firms cannot choose to price above or below
 - RDD identifies causal effect of being randomly assigned LIS
- Assumption: pricing above or below the benchmark is as good as random
 - Plan characteristics do not change

Results (2a)

- Pricing below the benchmark leads to a substantial increase in enrollment → 150% higher market share

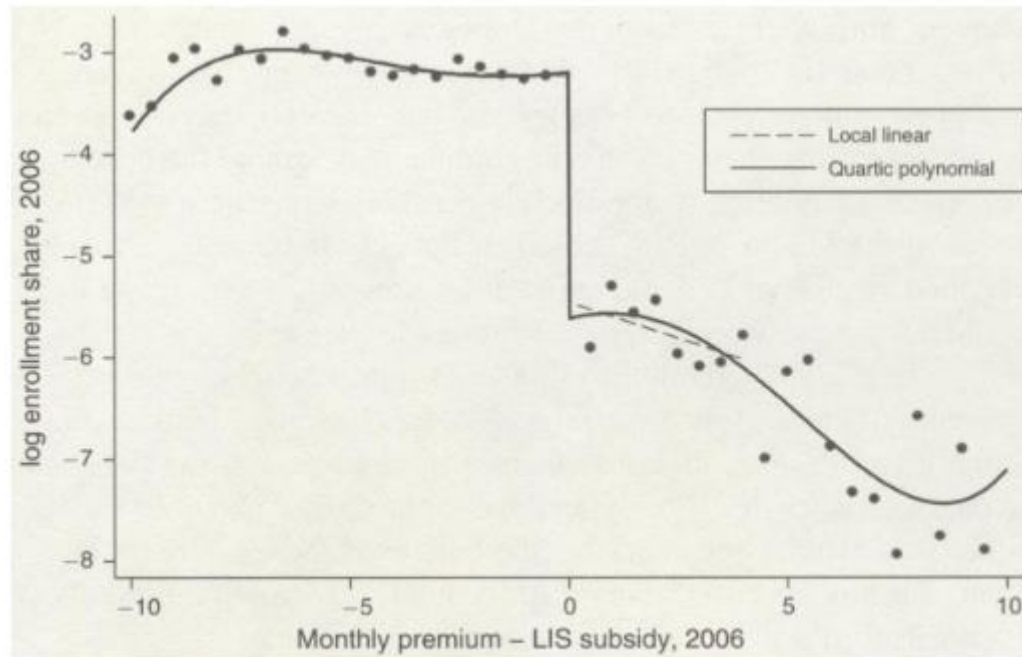


FIGURE 3. THE EFFECT OF 2006 BENCHMARK STATUS ON 2006 ENROLLMENT

Results (2a)

- Log plan share VS Benchmark Status
- Plans that priced below the benchmark both years had market shares that were 209 log points higher than plans that were below the benchmark in neither year

TABLE 3—EFFECT OF LIS BENCHMARK STATUS IN 2006 ON PLAN ENROLLMENT

$\ln s_t$	2006	2007	2008	2009	2010
<i>Panel C. Past interactions, local linear, bandwidth \$4</i>					
Below benchmark or de minimis in:					
2006 and current year	2.224*** (0.283)	2.089*** (0.364)	2.377*** (0.275)	2.633*** (0.257)	2.443*** (0.309)
2006 but not current year		0.628** (0.293)	0.892** (0.329)	1.068** (0.446)	0.967 (0.625)
Current year but not 2006		0.148 (0.290)	1.356*** (0.293)	2.107*** (0.242)	2.281*** (0.259)
Premium—subsidy, 2006	Linear	Linear	Linear	Linear	Linear
Observations	306	299	298	246	212
R^2	0.576	0.480	0.426	0.498	0.467

Results (2b)

- Effect of pricing below benchmark on subsequent pricing
- No obvious discontinuity

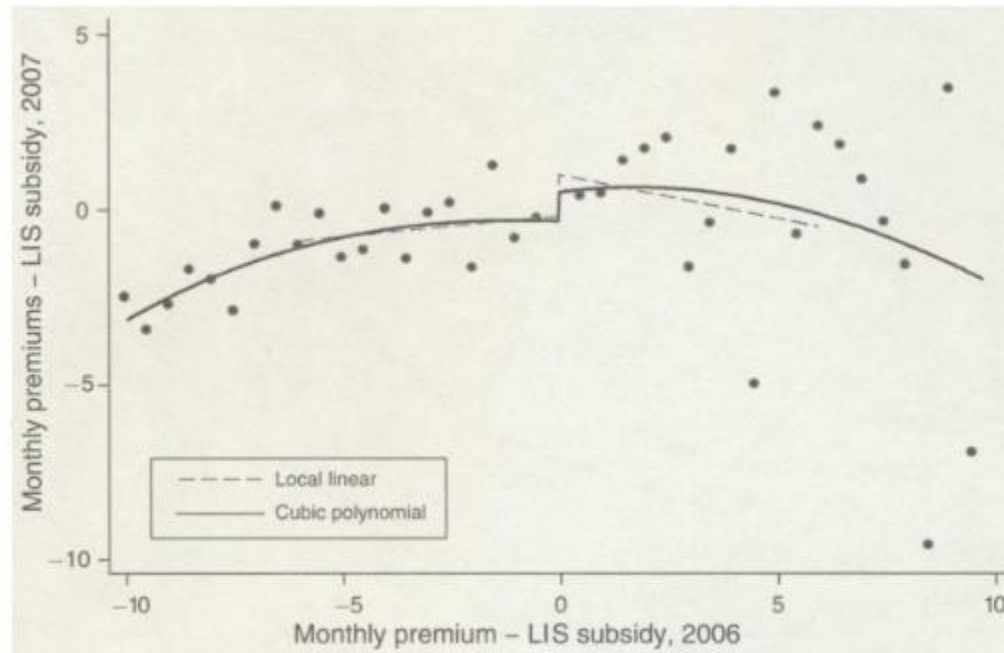


FIGURE 4. THE EFFECT OF 2006 BENCHMARK STATUS ON 2007 PREMIUMS

Results (2c)

- Prices follow the pattern predicted by invest-then-harvest pricing

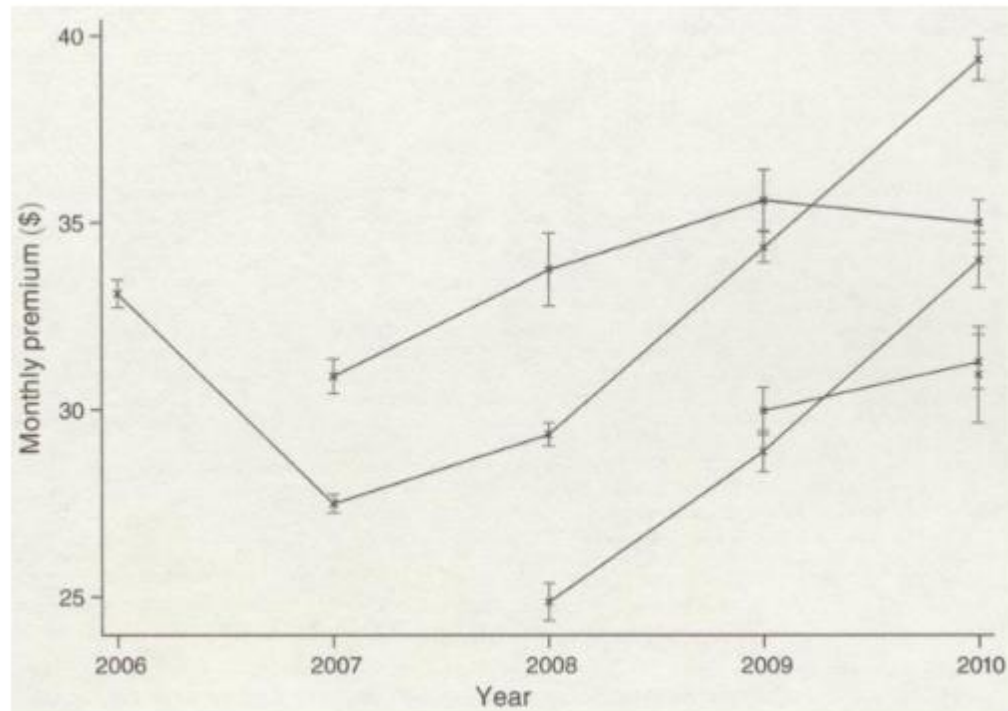


FIGURE 5. EVOLUTION OF COHORT PREMIUMS OVER TIME

Results (2c)

- Pricing evidence of invest-then-harvest behavior

TABLE 4—MEDICARE PART D PREMIUMS BY PLAN AGE

	ln(monthly premium)					
	Equal weighted			Enrollment weighted		
	(1)	(2)	(3)	(4)	(5)	(6)
Year of plan existence						
...2nd year	−0.0167 (0.0508)	−0.0103 (0.0597)	0.0129 (0.0511)	0.0183 (0.0478)	−0.0229 (0.0446)	0.0139 (0.0593)
...3rd year	0.0290 (0.0808)	0.0585 (0.0699)	0.0785 (0.0519)	0.128** (0.0528)	0.0795** (0.0326)	0.133*** (0.0358)
...4th year	0.0690 (0.0660)	0.117* (0.0617)	0.148*** (0.0496)	0.199*** (0.0647)	0.112** (0.0522)	0.191*** (0.0684)
...5th year	0.177** (0.0871)	0.147** (0.0593)	0.0960* (0.0551)	0.320*** (0.0861)	0.154*** (0.0530)	0.152* (0.0764)
Firm offers M.A. plan		−0.145** (0.0653)			−0.0390 (0.0350)	
Type of basic plan	No	Yes	Yes	No	Yes	Yes
Firm fixed effects	No	No	Yes	No	No	Yes
Observations	4,276	4,276	4,276	4,123	4,123	4,123
R ²	0.189	0.396	0.405	0.364	0.632	0.683

Threats

- Threat of adverse selection of enrollees
- Violation of assumptions
 - Threat of benchmark manipulation
 - Threat of risk adjustment discrepancies

Concluding Thoughts

- Inertia limits how enrollees respond to policy changes
 - Magnitude of switching frictions is $\sim \$50$ (10% of annual premiums)
- Invest-then-harvest pricing behaviors are consistent with the data
- Commitment to future prices could reduce inefficient switching

Thank you!

Questions?

Appendix

Descriptive Statistics

TABLE 1—DESCRIPTIVE STATISTICS OF MEDICARE PART D PLANS

	Cohort (Year of plan introduction)				
	2006	2007	2008	2009	2010
Mean monthly premium	\$37 (13)	\$40 (17)	\$36 (20)	\$30 (5)	\$33 (9)
Mean deductible	\$92 (116)	\$114 (128)	\$146 (125)	\$253 (102)	\$118 (139)
Fraction enhanced benefit	0.43	0.43	0.58	0.03	0.69
Fraction of plans offered by firms already offering a plan . . .					
...in the United States	0.00	0.76	0.98	1.00	0.97
...in the same state	0.00	0.53	0.91	0.68	0.86
Number of unique firms	51	38	16	5	6
Number of plans	1,429	658	202	68	107

Firm Objective Function

$$V_{jt} = (p_{jt} - c_{jt}) s_{jt} + \delta V_{jt+1}(s_{jt})$$

$$p_{jt} - c_{jt} = \frac{s_{jt}}{-ds_{jt}/dp_{jt}} - \delta \frac{dV_{jt+1}(s_{jt})}{ds_{jt}}$$

Results (2)

TABLE 3—EFFECT OF LIS BENCHMARK STATUS IN 2006 ON PLAN ENROLLMENT

$\ln s_t$	2006	2007	2008	2009	2010
<i>Panel A. Local linear, bandwidth \$4</i>					
Below benchmark, 2006	2.224*** (0.283)	1.332*** (0.267)	0.902*** (0.248)	0.803** (0.362)	0.677 (0.481)
Premium—subsidy, 2006					
Below benchmark	−0.0141 (0.0322)	−0.0774 (0.0882)	−0.0731 (0.116)	−0.170 (0.105)	−0.215** (0.0878)
Above benchmark	−0.142* (0.0783)	−0.0331 (0.110)	0.0494 (0.163)	0.0737 (0.170)	0.0488 (0.202)
Observations	306	299	298	246	212
R^2	0.576	0.325	0.131	0.141	0.124
<i>Panel B. Polynomial with controls, bandwidth \$4</i>					
Below benchmark, 2006	2.464*** (0.222)	1.364*** (0.321)	0.872*** (0.246)	0.351 (0.324)	−0.277 (0.301)
Premium—subsidy, 2006	Quadratic	Quadratic	Quadratic	Quadratic	Quadratic
Observations	306	299	298	246	212
R^2	0.794	0.576	0.472	0.535	0.685
<i>Panel C. Past interactions, local linear, bandwidth \$4</i>					
Below benchmark or de minimis in:					
2006 and current year	2.224*** (0.283)	2.089*** (0.364)	2.377*** (0.275)	2.633*** (0.257)	2.443*** (0.309)
2006 but not current year		0.628** (0.293)	0.892** (0.329)	1.068** (0.446)	0.967 (0.625)
Current year but not 2006		0.148 (0.290)	1.356*** (0.293)	2.107*** (0.242)	2.281*** (0.259)
Premium—subsidy, 2006	Linear	Linear	Linear	Linear	Linear
Observations	306	299	298	246	212
R^2	0.576	0.480	0.426	0.498	0.467