Sinking, Swimming, or Learning to Swim in Medicare Part D

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Research on Part D

- Expensive but largely deemed successful
  - Participation rates over 90%.
  - Expanded prescription drug use and lowered out-of-pocket (OOP) drug prices.
  - Beneficiaries are generally satisfied with the program.
  - The overall cost of the program is lower than initially expected, though still high (>$39 billion per year)
    ⇒ Is it worth it?

- Most remaining controversy is about whether consumer choice of private plans is beneficial.

The Early Consensus

MCFADDEN (2006):

"The new Medicare Part D prescription drug insurance market illustrates that leaving a large block of uninformed consumers to sink or swim, and relying on their self-interest to achieve satisfactory outcomes can be unrealistic."

—— Presidential Address to the AEA on January 7, 2006.

The Early Consensus

KRUGMAN (2006):

"The insertion of private intermediaries into the program has several unfortunate consequences. First, as millions of seniors have discovered, it makes the system extremely complex and obscure. It is virtually impossible for most people to figure out which of the many drug plans now on offer is best."

— The New York Review of Books, March 23, 2006.

The Early Consensus

THALER AND SUNSTEIN (2008):

"(...) offering people forty-six choices and telling them to ask for help is likely to be about as good as no help at all."

—— "Nudge," Chapter 10.

The Early Consensus

Liebman and Zeckhauser (2008):

"Health insurance is too complicated a product for most consumers to purchase intelligently and it is unlikely that most individuals will make sensible decisions when confronted with these choices."

— NBER Working Paper No. 14330.

Evidence on Consumer Choice

Medicare Part D is an important, high stakes environment to study how consumers' choose from many complex, multi-attribute products.

- Burgeoning research showing numerous consumer biases, particularly when cognition is limited by age, illness or limited attention, or overwhelmed by too many choices (DellaVigna 2009).

- Similar conclusions in Part D.
  - Kling, Mullainathan, Shafir, Vermeulen, and Wrobel (2009). SEe p4 of paper for summary
  - Heiss, McFadden and Winter (2007).
  - Abaluck and Gruber (2009).

- But largely cross-sectional and lab-based.
  ⇒ Precludes the roles of market evolution, learning and decision support (List 2003, 2004, 2006, 2008).

Indirectly Related Works

We are not the first to study whether consumers revise their past choices in order to minimize expenses.

- Della Vigna and Malmendier - AER (2006).

- Economides, Seim, and Viard - RAND (2008).

- Miravete - AER (2002).

The major difference with the present paper is that Part D insurance companies also change plans every year (perhaps due to learning) $\Rightarrow$ Ignoring the supply side we might attribute an excessive portion of the overspending to consumer mistakes.

History

- The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 was enacted on January 1st, 2006.

- It is the most important expansion of an entitlement program in three decades (currently at about $39bn a year).

- It aims at providing access to affordable drug coverage to all Medicare beneficiaries (senior citizens).

- It does so without relying on the government to provide the improved drug benefit directly although the whole program is heavily subsidized.

How does it work?

After turning sixty-five, senior citizens become eligible for Medicare benefits.

- Among the different benefits, Part D offers several plans to insure against the cost of drugs.

- A plan generally includes an annual premium, some deductible, a set of drugs automatically covered on the formulary.

    - Enhanced plans may insure against the doughnut hole.
    - Beneficiaries may have a preference for different plans depending on their financial status and medical conditions.
    - Plans differ across regions, need to be approved, and are required to be actuarially equivalent.

Part D Regions
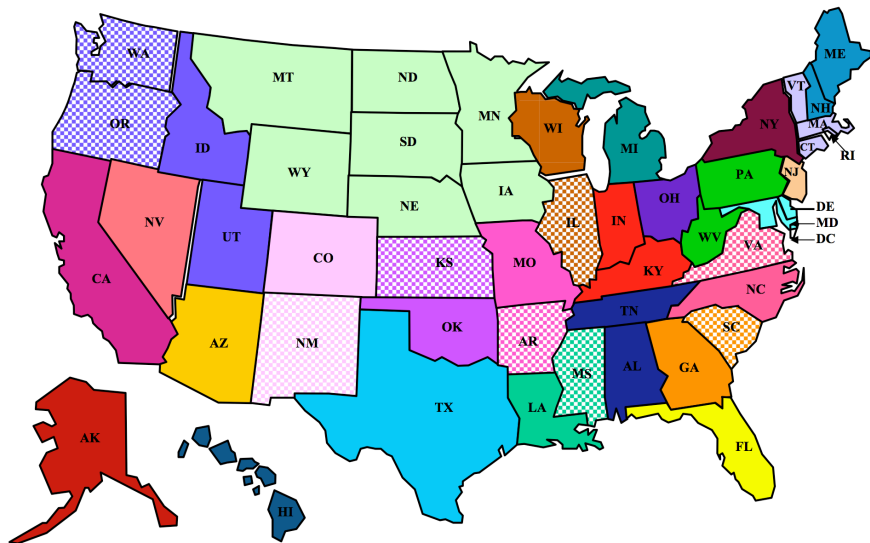
Consumers Choose

Consumers take responsibility for choosing their desired level of coverage rather than leaving the government to offer an uniform coverage to everybody.

- Consumers have to choose among numerous competing private insurance providers.
    - The goal is to foster competition among insurers so that drugs are provided at the lowest cost possible.
    - Simultaneously, the overall cost of the program is controlled by exposing enrolles to the full incremental cost of drugs ("doughnut hole" with thresholds at $2,250 and $5,100 in 2006).
    - Participation in the program is induced by increasing premiums by 1% for each month's delay past initial eligibility (after turning sixty-five year old).

Choosing Among Plans

Beneficiaries may have to discern among up to 50 different plans.

- Each October, starting in 2005, beneficiaries have an enrollment period of six weeks to sign up for one of the plans available for the following year.

- Information about these plans is widely available. Ways to compare became widely available during 2006 (in both government and private websites).

- The selection cannot be changed until next year (unless the beneficiary falls in the low income category).

- If a beneficiary fails to enroll, premiums increase by 1% each month delayed.

- Low income beneficiaries that fail to enroll in a plan are automatically and randomly enrolled in one of the income-subsidized plans.

Important Issues

Medicare Part D presents a unique opportunity to study the determinants of choices among complex options:

- Consumers face multiple common attributes characterizing insurance plans $\Rightarrow$ Potential role of uncertainty and complexity.
- Consumers also face specific attributes due to plans formularies and their medical conditions $\Rightarrow$ Indidividual heterogeneity.
- Subjects are old and potentially sick individuals $\Rightarrow$ Incidence of aging and limited cognitive ability.
- In 2006 all individuals of different age face these choices for the first time $\Rightarrow$ Avoid individual heterogeneity due to initial conditions.
- Consumer needs can be addressed $\Rightarrow$ Role of expectations.
- We can only partially address the issue of risk aversion.

A Most Important Issue

Suppose that using a cross-section of data we can determine whether individuals' out of pocket expenses in drugs exceeded those under a different plan than the one chosen.

- (This is a more complicated task that what it seems. Need to care not only by price differences of drugs but also by coverage of each formulary.)

- Should we conclude that individuals are not rational? Is it all a matter of a complex choice by old individuals with limited cognition?

- What size of the mistake turns an individual into a non-rational subject?

- Should the government intervene? How? What model should guide the intervention?

- Choices are repeated over time ⇒ Learning? Switching?

Provocative Descriptive Results

Figure 1. Overspending by Year
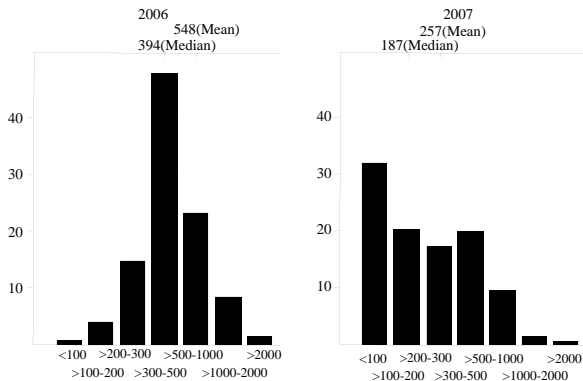
- In 2006 year beneficiaries overspent $300 - $500 (with a long right tail).
- But in 2007, the OOP distribution shifts left, with substantially more beneficiaries closer to the cost-minimizing choice (mean OOP: $260).

Questions Addressed

- Do consumers' choices of Part D Plans (PDPs) improve over time? Or do poor choices persist?
- Who improved most, and how?
- Do age and cognitive limitations inhibit improvement?
- Broader question: Is choice beneficial (neoclassical economics) or does confusion reign (behavioral economics)?
  If confusion:
  - Non-beneficial products can flourish.
  - Partial economic rationale for greater regulation and government intervention, standardization of products and limited choice.
  - Concerns about health insurance, credit cards, mortgages, retirement planning, etc.
  - Economists need new models to interpret and predict consumer behavior.

The Analytical Approach

- Analyze two years of data on individuals' choices of PDPs, controlling for
    - Time-invariant individual heterogeneity.
    - Changes in health.

- Examine choice quality as measured by overspending
    - Defined as the difference between the chosen PDP and the cheapest option available (including no insurance).
    - An important component of expected utility, particularly given the well-documented persistence of drug spending over time.
    - Adopt an *ex post* approach, which in the cross section yields results highly similar to a fully myopic *ex ante* approach.

- Focus on within-person changes from 2006 to 2007.

- Also analyze switching decisions and decisions to enroll at all.

- Focus on the non-subsidy population exclusively in this paper.

Data Description

We combine public and proprietary data sources to construct a data set for 2006 and 2007.

- Centers for Medicare and Medicaid Services: All available PDPs and their formularies.
- CVS Caremark: Large data set of enrollees including:
  - Region of residence and the chosen plan.
  - Every prescription drug claim.
  - Subsidy status and level.
  - Gender, age, and health measures via Ingenix "PRG" system.
- Wolters Kluwer Health and CMS Plan Finder "Scraper" data: Prices of drugs in alternative plans.

Sample and Data Construction

- Sample:
  - Individuals enrolled for all of 2006 in a PDP or MA plan sold or administered by the PBM.
  - Total of 485,696 individuals, 224,803 in PDPs.
  - In the balanced panel we have 178,449 individuals; 71,399 non-subsidy and 107,050 subsidy, from all 34 PDP regions.

- Generating OOP costs:
  - Sum of the plan's premiums (net of any premium support) and OOP Rx costs.
  - Generate this for every available PDP.
  - And cost without insurance, using $0 premium and the CVS usual and customary prices.
  - Assume an elasticity of demand for Rx of -0.54 (Shea et al. 2007). $\Rightarrow$ We obtain similar results when assuming perfectly inelastic demand for Rx.

Table 1. Part D Plan Characteristics

	Plans in Study Sample			All Other Plans		
	Mean	5th Pct.	95th Pct.	Mean	5th Pct.	95th Pct.
2006						
Deductible	245.79	250	250	101.48	0	250
Annual Premium	354.34	296.04	400.56	311.04	83.16	569.64
Number of the Top 100 Drugs						
On the Formulary	93.57	92	98	95.58	78	100
Requiring Prior Authorization	5.50	5	7	7.94	2	13
"Doughnut hole" coverage for generics	0.00	0	0	0.03	0	0
"Doughnut hole" coverage for brands	0.00	0	0	0.03	0	0
Enhanced plan	0.00	0	0	0.17	0	1
Observations		95			1,336	
2007						
Deductible	211.73	0	265	115.19	0	265
Annual Premium	308.72	184.8	428.4	329.93	147.6	579.6
Number of the Top 100 Drugs						
On the Formulary	88.22	85	97	93.33	80	97
Requiring Prior Authorization	3.66	1	8	1.05	0	3
"Doughnut hole" coverage for generics	0.06	0	1	0.07	0	1
"Doughnut hole" coverage for brands	0.00	0	0	0.02	0	0
Enhanced plan	0.07	0	1	0.21	0	1
Observations		258			1,546	

NOTE: The plan is identified by the plan ID, which is unique for each region. Variables for the percent of top 100 drugs are generated from the "scraper" data described in the text. Other variables are from the CMS data. All mean values are weighted by the plan enrollment reported in the July 2006 CMS plan enrollment file, and the sample is restricted to those reporting positive enrollment in that file.

- 2006: Our plans offered slightly lower deductibles but higher premiums, lower formulary coverage and no doughnut hole coverage.
- Plans became more generous between 2006 and 2007 in some dimensions (lower premiums and deductibles and doughnut hole coverage for generics).

Estimates of Mean Improvement

Estimate the regression:

$$\Delta O_i = \alpha + \Gamma \Delta H_i + \Delta u_i,$$

where:

- Parameter of interest: α is the average within-person change in overspending.
- ΔO_i: within-person change in overspending.
- ΔH_i: within-person changes in health measures.
- Δu_i: changes in the idiosyncratic error.

Estimate this on the full sample, with and without controls for within-person changes in health, and on sub-sample with stable health.

Table 2. First Difference Models of Within-Person Change in Overspendin
2006-2007

| | Health Controls | | Stable Health Only | |
| | | | Inclusive | Narrow |
	No	Yes	Definition	Definit
Intercept	-295.8	-298.15	-265.96	-254.66
	[3.887] ***	[4.128] ***	[6.925] ***	[9.265]
Observations	71,498	71,498	30,183	15,268
Mean Overspending in 2006	546.18	546.18	514.83	503.58
Within-person change in Overspending				
5th Percentile	-1,137.7	-1,137.7	-1,044.4	-989.6
10th Percentile	-766.4	-766.4	-681.3	-641.8
25th Percentile	-409.3	-409.3	-381.3	-364.6
50th Percentile	-236.3	-236.3	-210.3	-189
75th Percentile	-43.6	-43.6	-38.2	-38.2
90th Percentile	99.3	99.3	77.8	72.7
95th Percentile	236.6	236.6	189.2	148.6

NOTE: Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<(

- Mean reduction in overspending of \$300, or 54%. 80% improved, with mean reductions for them about 2x larger than mean increases for those who worsened.
- Results are robust to changes in individual health.

Heterogeneity by Observed Individual Characteristics

To test how improvement varied by demographics, we estimate:

$$\Delta O_i = \alpha + \Gamma \Delta H_i + \beta_1 Z_i + \Delta u_i,$$

where Z_i includes time-invariant observed characteristics of each individual.

Results:

- Change in OOP varies substantially with observed demographics.

- Greatest reduction by oldest and common conditions such as cholesterol and diabetes but average for those with Alzheimer's. $\Rightarrow$ Cognitive limitations overcome by support, e.g. family, health care providers, search tools.

- Effects of medical conditions persist even after controlling for levels in drug spending $\Rightarrow$ OOP reduction are monotonically larger with the size of 2006 overspending.

Table 3. Within-Person Change in Overspending 2006-2007, by Observed Individual Characteristics

2006-2007 Change Allowed to Vary with:	Age, Sex, Levels and Changes in Health		Plus 2006 Overspending			Plus Levels and Changes in Drug Consumption		
Overspending Level in 2006 ($)								
less than 100			*Reference Category*			*Reference Category*		
between 100 and 200			-164.55	[21.266]	***	-128.31	[46.098]	***
between 200 and 300			-254.36	[24.627]	***	-221.49	[49.369]	***
between 300 and 500			-407.93	[21.013]	***	-376.38	[42.488]	***
between 500 and 1000			-632.35	[20.959]	***	-615.01	[29.741]	***
between 1,000 and 2,000			-1300.46	[21.811]	***	-1349.59	[56.913]	***
more than 2000			-3180.73	[205.334]	***	-3392.43	[185.195]	***
Age in 2006								
Age 65-69	*Reference Category*		*Reference Category*			*Reference Category*		
Age 70-74	-43.20	[10.543] ***	-26.85	[9.046]	***	-23.72	[10.411]	**
Age 75-79	-62.75	[16.323] ***	-38.16	[15.677]	**	-33.65	[18.875]	*
Age 80-84	-113.84	[9.333] ***	-86.64	[7.726]	***	-78.61	[12.713]	***
Age 85 up	-108.90	[8.669] ***	-93.36	[7.274]	***	-83.37	[14.308]	***
Male	13.69	[11.411]	26.79	[10.164]	***	28.15	[10.965]	**
Risk Score in 2006	-40.67	[4.321] ***	-1.14	[3.161]		-31.16	[32.799]	
Took medication in 2006 for								
Hypertension	23.14	[10.237] **	10.63	[9.744]		10.44	[9.288]	
Cholesterol and other cardiovascular	-72.31	[11.837] ***	-22.26	[10.828]	**	-23.56	[11.272]	**
Pain	34.79	[11.122] ***	7.37	[9.910]		7.60	[10.190]	
Mental health	20.60	[13.153]	19.02	[11.388]	*	30.35	[15.658]	*
Antibiotics	9.94	[9.411]	-3.46	[8.108]		-2.73	[8.069]	
Anticoagulants	-44.19	[10.885] ***	-16.57	[9.101]	*	-19.29	[10.602]	*
Thyroid	0.47	[8.992]	11.33	[7.570]		21.20	[11.431]	*
Diabetes	-2.42	[13.515]	-1.57	[10.306]		16.54	[16.852]	
Osteoporosis	-13.35	[9.772]	-22.25	[7.633]	***	-31.44	[13.001]	**
Alzheimer's	17.70	[17.741]	-4.08	[13.442]		-13.86	[18.937]	
Change in Risk Score	5.30	[5.678]	14.71	[5.234]	***	-8.83	[23.906]	
Change in takes medication for								
Hypertension	-17.49	[13.376]	-22.49	[11.723]	*	-25.35	[11.541]	**
Cholesterol and other cardiovascular	-14.67	[18.356]	2.66	[17.117]		2.96	[17.669]	
Pain	1.32	[8.385]	-7.10	[7.387]		-7.50	[7.601]	
Mental health	1.08	[12.062]	2.97	[10.654]		17.34	[16.779]	
Antibiotics	-5.39	[8.506]	-11.00	[7.714]		-10.74	[7.558]	
Anticoagulants	-50.08	[15.037] ***	-37.00	[12.945]	***	-38.88	[13.690]	***
Thyroid	21.64	[13.154] *	15.72	[10.375]		23.29	[13.117]	*
Diabetes	-27.59	[39.749]	-42.43	[37.147]		-35.06	[37.583]	
Osteoporosis	-27.00	[12.910] **	-26.52	[10.555]	**	-37.62	[17.097]	**
Alzheimer's	-9.42	[19.961]	-49.81	[16.904]	***	-41.91	[17.594]	**
2006 Gross Drug Spending						0.04	[0.040]	
Change in Gross Drug Spending						0.04	[0.040]	
Intercept	-40.00	[9.800] ***	293.64	[23.585]	***	264.06	[44.513]	***
Observations	71,494		71,494			30,179		

NOTE: Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Figure 2. Overspending by Year and Switching
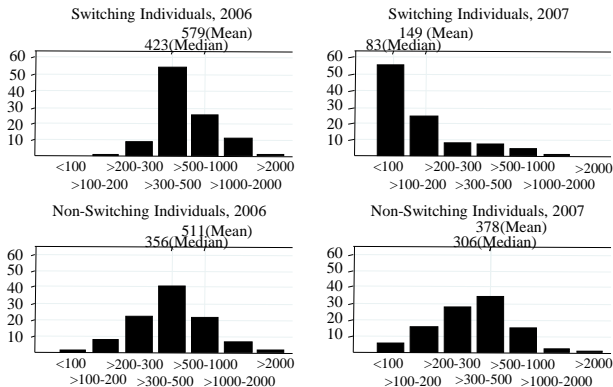
- Switchers overspent more in 2006 and improved more in 2007 $\Rightarrow$ Financial incentives promoted learning about alternative plans.
- Nonswitchers also improved $\Rightarrow$ Mostly due to improvement in their own plans relative to changes in the minimum-cost alternatives.

Learning and Switching

To further study the effect of switching on OOP, we estimate two models:

$$\Delta O_i = \alpha + \Gamma \Delta H_i + \sigma S07_i + \Delta u_i,$$

$$\Delta O_i = \alpha + \Gamma \Delta H_i + \beta_1 Z_i + \sigma S07_i + \Delta u_i,$$

where $S07_i$ indicates whether the beneficiary switched plans between 2006 and 2007.

Results:

- Results are similar to changes in unconditional means of Figure 2.
- Non-switchers reduce OOP by $\$136$ and switchers by $\$436$.
- Accounting for demographics only reduces the difference of OOP of switchers and non-switchers from $\$299$ to $\$233$.
- Holding 2006 consumption constant $\Rightarrow$ non-switchers reduced OOP by $\$115$ (due to plan design and availability only).

Table 4. Within-Person Change in Overspending 2006-2007, by Switching and Other Observed Individual Characteristics

2006-2007 Change Allowed to Vary with:	Full Sample		Subset with Stable Health Only
	Switching Plans and Changes in Health	Plus Other Characteristics	Plus Other Characteristics
Switched plans	-299.31 [8.242] ***	-232.84 [7.264] ***	-232.68 [12.816] ***
Overspending Level in 2006 ($)			
less than 100		Reference Category	Reference Category
between 100 and 200		-172.43 [21.199] ***	-217.80 [44.579] ***
between 200 and 300		-219.53 [24.751] ***	-244.69 [53.097] ***
between 300 and 500		-310.02 [21.089] ***	-339.17 [44.565] ***
between 500 and 1000		-544.09 [21.188] ***	-565.13 [44.623] ***
between 1,000 and 2,000		-1194.28 [22.341] ***	-1225.34 [46.275] ***
more than 2000		-3108.02 [206.701] ***	-2470.66 [428.845] ***
Age in 2006			
Age 65-69		Reference Category	Reference Category
Age 70-74		-3.36 [9.177]	-7.61 [6.901]
Age 75-79		16.87 [16.779]	31.22 [34.708]
Age 80-84		-11.49 [8.502]	-8.59 [10.112]
Age 85 up		-3.19 [8.208]	3.11 [9.522]
Male		-3.95 [9.674]	14.17 [17.706]
Risk Score in 2006		0.98 [3.142]	3.34 [4.290]
Took medication in 2006 for			
Hypertension		12.10 [9.719]	15.89 [15.608]
Cholesterol and other cardiovascular		-20.90 [10.783] *	-41.99 [19.877] **
Pain		3.59 [9.867]	0.62 [14.388]
Mental health		13.72 [11.334]	0.92 [13.672]
Antibiotics		-9.92 [8.058]	-13.37 [13.291]
Anticoagulants		-18.74 [9.053] **	-31.32 [18.201] *
Thyroid		2.09 [7.526]	-7.55 [11.593]
Diabetes		4.61 [10.176]	-23.09 [17.264]
Osteoporosis		-23.97 [7.534] ***	-56.69 [11.528] ***
Alzheimer's		-15.92 [13.319]	-44.42 [22.231] **
Change in Risk Score	22.54 [6.409] ***	16.25 [5.238] ***	72.24 [39.035] *
Change in takes medication for			
Hypertension	-9.67 [12.502]	-20.05 [11.657] *	-1.37 [11.265]
Cholesterol and other cardiovascular	27.18 [18.210]	-0.49 [17.098]	-34.34 [14.596] **
Pain	-19.08 [6.252] ***	-12.05 [7.355]	-7.73 [10.247]
Mental health	-26.50 [12.797] **	-17.35 [10.743]	-5.12 [16.350]
Antibiotics	-8.95 [7.961]	-13.64 [7.708] *	-41.91 [17.288] **
Anticoagulants	-28.97 [13.970] **	-35.17 [12.850] ***	-14.65 [22.395]
Thyroid	6.13 [12.535]	10.89 [10.022]	-4.31 [21.185]
Diabetes	-37.31 [40.774]	-39.91 [36.863]	-5.26 [40.122]
Osteoporosis	-6.70 [12.606]	-26.15 [10.376] **	-48.69 [20.443] **
Alzheimer's	-42.75 [19.897] **	-54.10 [16.677] ***	-56.90 [27.293] **
Intercept	-136.44 [7.642] ***	290.96 [23.499] ***	326.90 [48.454] ***
Observations	71,498	71,494	30,179

NOTE: Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

The Switching Decision

Estimate the Probit model:

$$S07_i = \beta_0 + \Gamma H_i + \beta_1 Z_i + u_i. \tag{1}$$

where Z_i also includes a measure of how the 2006 plan changed in 2007, defined as the difference in the plan's percentile ranking in the individual's choice set.

Results:

- Switching differs with demographics.
- Health status (level) $\Rightarrow$ switching not affected by status.
- Change in health status reduces the probability of switching $\Rightarrow$ beneficiaries anticipate future drug needs.
- Lack of inertia $\Rightarrow$ Probability of switching increases if OOP in 2006 falls between $\$200 - \$300$ and more than doubles if OOP exceeds $\$300$.
- Individuals move away from their previous choices if those plans become relatively more expensive.

Table 5. Average Marginal Effects from Probit Models of Switching

	Full Sample	Subset with Stable Health
Overspending Level in 2006 ($)		
less than 100	*Reference Category*	*Reference Category*
between 100 and 200	-0.08 [0.039] **	-0.12 [0.067] *
between 200 and 300	0.21 [0.032] ***	0.21 [0.057] ***
between 300 and 500	0.49 [0.029] ***	0.51 [0.051] ***
between 500 and 1000	0.50 [0.020] ***	0.49 [0.037] ***
between 1,000 and 2,000	0.48 [0.010] ***	0.49 [0.017] ***
more than 2000	0.43 [0.007] ***	0.45 [0.011] ***
Change in 2006 Plan's Percentile Ranking	0.79 [0.009] ***	0.85 [0.016] ***
Age in 2006		
Age 65-69	*Reference Category*	*Reference Category*
Age 70-74	0.12 [0.007] ***	0.14 [0.010] ***
Age 75-79	0.25 [0.006] ***	0.28 [0.009] ***
Age 80-84	0.33 [0.006] ***	0.36 [0.008] ***
Age 85 up	0.39 [0.005] ***	0.41 [0.008] ***
Male	-0.14 [0.005] ***	-0.15 [0.007] ***
Risk score in 2006	0.01 [0.001] ***	0.00 [0.002] *
Took medication in 2006 for		
Hypertension	-0.02 [0.006] ***	-0.01 [0.009]
Cholesterol and other cardiovascular	-0.03 [0.006] ***	-0.04 [0.008] ***
Pain	0.00 [0.006]	0.00 [0.011]
Mental health	-0.03 [0.006] ***	-0.03 [0.010] ***
Antibiotics	-0.04 [0.006] ***	-0.04 [0.009] ***
Anticoagulants	-0.04 [0.006] ***	-0.04 [0.010] ***
Thyroid	-0.06 [0.006] ***	-0.06 [0.009] ***
Diabetes	0.01 [0.006]	0.02 [0.011]
Osteoporosis	-0.02 [0.006] ***	-0.03 [0.010] ***
Alzheimer's	-0.06 [0.012] ***	-0.02 [0.021]
Change in Risk Score	0.01 [0.001] ***	0.03 [0.016]
Change in takes medication for		
Hypertension	0.00 [0.009]	0.03 [0.021]
Cholesterol and other cardiovascular	-0.02 [0.008] ***	-0.03 [0.024]
Pain	-0.01 [0.005] **	-0.01 [0.009]
Mental health	-0.10 [0.007] ***	-0.14 [0.018] ***
Antibiotics	-0.02 [0.005] ***	-0.02 [0.008] *
Anticoagulants	-0.01 [0.009]	-0.02 [0.024]
Thyroid	-0.04 [0.015] ***	-0.02 [0.030]
Diabetes	-0.01 [0.014]	0.04 [0.054]
Osteoporosis	0.00 [0.009]	0.00 [0.024]
Alzheimer's	-0.02 [0.014]	0.02 [0.060]
Observations	71,489	30,179

NOTE: Robust standard errors in brackets. *** p<0.01, **p<0.05, * p<0.1.

Robustness

- Zero elasticity of demand $\Rightarrow$ Slightly (20%) larger improvements in OOP reduction.

- ex ante vs. ex post $\Rightarrow$ (2006 drug consumption only): OOP is slightly lower with the ex post benchmark.

**Table 7. Comparing 2007 Overspending Using *Ex Ante*
and *Ex Post* Prescription Drug Claims**

	Ex Post Using 2007 Claims	Ex Ante Using 2006 Claims
Mean	257.2	308.32
Median	186.78	209.14
5th Percentile	0.00	0.00
10th Percentile	2.87	17.14
25th Percentile	67.35	87.19
75th Percentile	342.37	355.32
90th Percentile	526.35	546.92
95th Percentile	697.64	725.59

NOTE: The *ex ante* approach defines the total spending in each available
plan in 2007 using the claims filled by the person in 2006. The *ex post*
approach uses the claims filled by the person in 2007. Both rely on the
plans available and their attributes (e.g., premiums and formularies) in
2007 and their attributes in 2007.

Participation

Table 6. Select Results for Within-Person Changes in Overspending from Models
Assuming Perfectly Inelastic Demand for Prescription Drugs

Panel A. Results from models identical to those in Table 2.

	Health Controls:		No				Yes	
Intercept		-360.54	[4.712]	***		-368.21	[4.991]	***

Panel B. Results from models identical to those in Table 3.

2006-2007 Improvement Allowed to Vary with:	*Age, Sex, Levels and Changes in Health*			*Plus 2006 Overspending*		
Overspending Level in 2006 ($)						
less than 100				*Reference Category*		
between 100 and 200				-144.05	[42.088]	***
between 200 and 300				-250.31	[43.406]	***
between 300 and 500				-495.49	[41.375]	***
between 500 and 1000				-880.02	[41.451]	***
between 1,000 and 2,000				-1875.95	[42.404]	***
more than 2000				-4169.78	[238.207]	***
Age in 2006						
Age 65-69	*Reference Category*			*Reference Category*		
Age 70-74	-50.20	[13.833]	***	-25.16	[11.621]	**
Age 75-79	-75.15	[18.765]	***	-36.93	[17.483]	**
Age 80-84	-133.86	[12.430]	***	-91.17	[10.000]	***
Age 85 up	-122.73	[11.653]	***	-96.40	[9.448]	***
Male	4.92	[13.300]		22.64	[11.546]	**
Intercept	376.40	[42.965]	***	-158.11	[8.859]	***

Participation

Panel C. Results from Models Identical to those in Table 4.

2006-2007 Improvement Allowed to Vary with:	*Switching Plans and Changes in Health*			*Plus Other Characteristics*		
Switched plans	-388.86	[9.870]	***	-286.22	[8.768]	***
Overspending Level in 2006 ($)						
less than 100				-153.74	[42.191]	***
between 100 and 200				-207.49	[43.591]	***
between 200 and 300				-375.13	[41.548]	***
between 300 and 500				-772.02	[41.713]	***
between 500 and 1000				-1745.42	[42.868]	***
between 1,000 and 2,000				-4080.40	[239.748]	***
more than 2000						
Age in 2006						
Age 65-69	*Reference Category*			*Reference Category*		
Age 70-74				3.70	[11.778]	
Age 75-79				30.70	[18.661]	*
Age 80-84				1.21	[10.870]	
Age 85 up				14.44	[10.512]	
Male				-15.14	[11.064]	
Intercept	-158.11	[8.859]	***	373.10	[43.028]	***

NOTE: Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

SUMMARY

Among the non-subsidy sample:

- 40-54% ($300) reductions in overspending from 2006 to 2007, with 80% improving.

- Switching plans was the primary (but not the only) source of improvement:

  - Those who switched plans improved by $436 on average.
  - Those who did not switch improved by an average of $137.

- Previous overspending and future relative worsening of the current plan both substantially increased the likelihood of switching $\Rightarrow$ Undermines claims of inertia.

- Decisions to enroll consistent with cost minimization.