

Employee cost-sharing and the welfare effects of Flexible Spending Accounts

William Jack, Georgetown

Arik Levinson, Georgetown

Sjamsu Rahardja, World Bank

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MOTIVATION

Evidence that medical care costs are being "shifted" on to employees

- Employees "pay" increasing share of premiums

Gruber and Knight (2003) - share of employees getting "free" insurance fell from 44% to 28% between 1982 and 1998

Kaiser Family Foundation survey (2003) - 51% of firms expected to increase employee premium contributions

- Employees exposed to higher out-of-pocket costs

Kaiser survey (2003) - 15% of firms expected to increase coinsurance rates in 2003

20% intended to increase out-of-pocket payments for prescription drugs

- Growth of Flexible Spending Accounts (FSAs)

RWJ survey results: 22% of firms offered FSAs in 1993 - 57% of midsize firms in 2003

For large firms, share offering FSAs increased from 69% in 1999 to 83% in 2003

QUESTIONS

- Is shift to higher cost-sharing related to growth in FSAs?
- Is the shift real?
- What are the welfare effects of the shift?

OUTLINE

- Modeling the choice of incomplete insurance
- Effects of subsidies on insurance choice
- Data
- Econometric issues - simultaneity and selection problems
- Results

MODELING INSURANCE CHOICE

- Representative consumer

Two goods, health H , and other consumption C

Exogenous income W

Price of health, $\theta \sim F$ on $[\theta_0, \theta_1]$

- Insurance policy (κ, P)

κ - coinsurance rate; P - premium

Assumption: θ non-contractible

- Note: More elaborate insurance policy would be fully non-linear

DEMAND FOR HEALTH

In state θ , individual solves

$$V(\kappa\theta, W - P) = \max_{C, H} U(C, H) \quad \text{s.t.} \quad W - P = C + \kappa\theta H$$

Expected utility

$$\Psi(\kappa, P) = \int_{\theta} V(\kappa\theta, W - P) dF$$

Total health expenditure in state θ , $q \equiv \theta H$

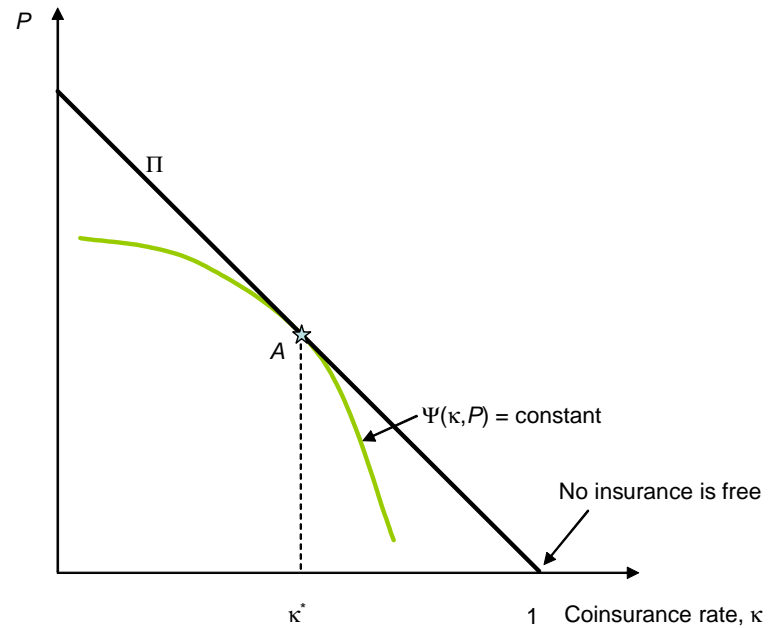
Marginal utility of income in state θ , $\alpha \equiv V_2$

OPTIMAL INSURANCE CHOICE

$$\max_{\kappa, P} \Psi(\kappa, P) \quad \text{s.t.} \quad P = (1 - \kappa) \int_{\theta} \theta H dF \equiv (1 - \kappa) \bar{q}$$

First order characterization

$$\underbrace{\text{cov}(q, \alpha)}_{\text{EU cost of } d\kappa} = \underbrace{-\bar{\alpha}(1 - \kappa) \frac{d\bar{q}}{d\kappa}}_{P \text{ saving from } d\kappa}$$

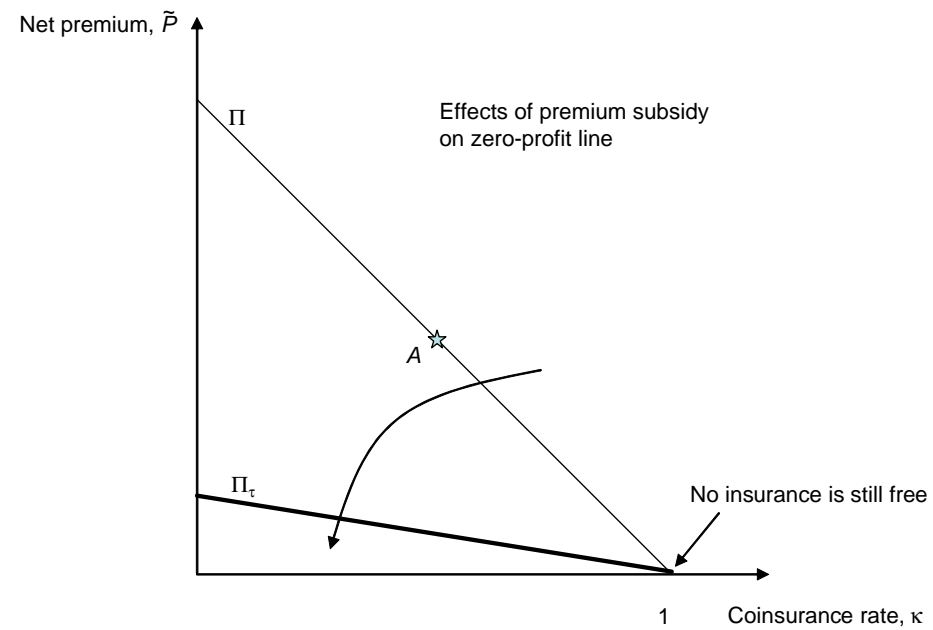


EFFECTS OF PREMIUM SUBSIDY

Marginal income tax rate τ ; Net premium is $(1 - \tau)P \equiv \tilde{P}$

Zero profit condition

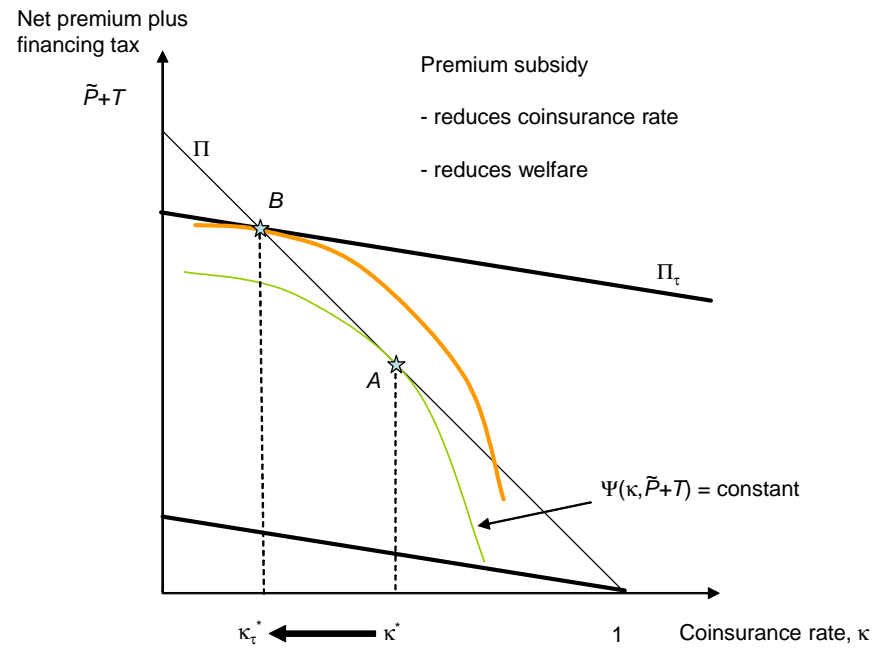
$$\frac{\tilde{P}}{(1 - \tau)} = (1 - \kappa)\bar{q}$$



BALANCED-BUDGET EFFECT OF PREMIUM SUBSIDY

Lump-sum taxes to finance the subsidy, T

Expected utility, $\Psi(\kappa, \tilde{P} + T)$



EFFECT OF COINSURANCE SUBSIDY

Out-of-pocket payments subsidized at a rate σ

Coinsurance rate, net of subsidy, $(1 - \sigma)\kappa \equiv \tilde{\kappa}$

Premium net of the subsidy, $(1 - \tau)P \equiv \tilde{P}$

Zero profit condition:

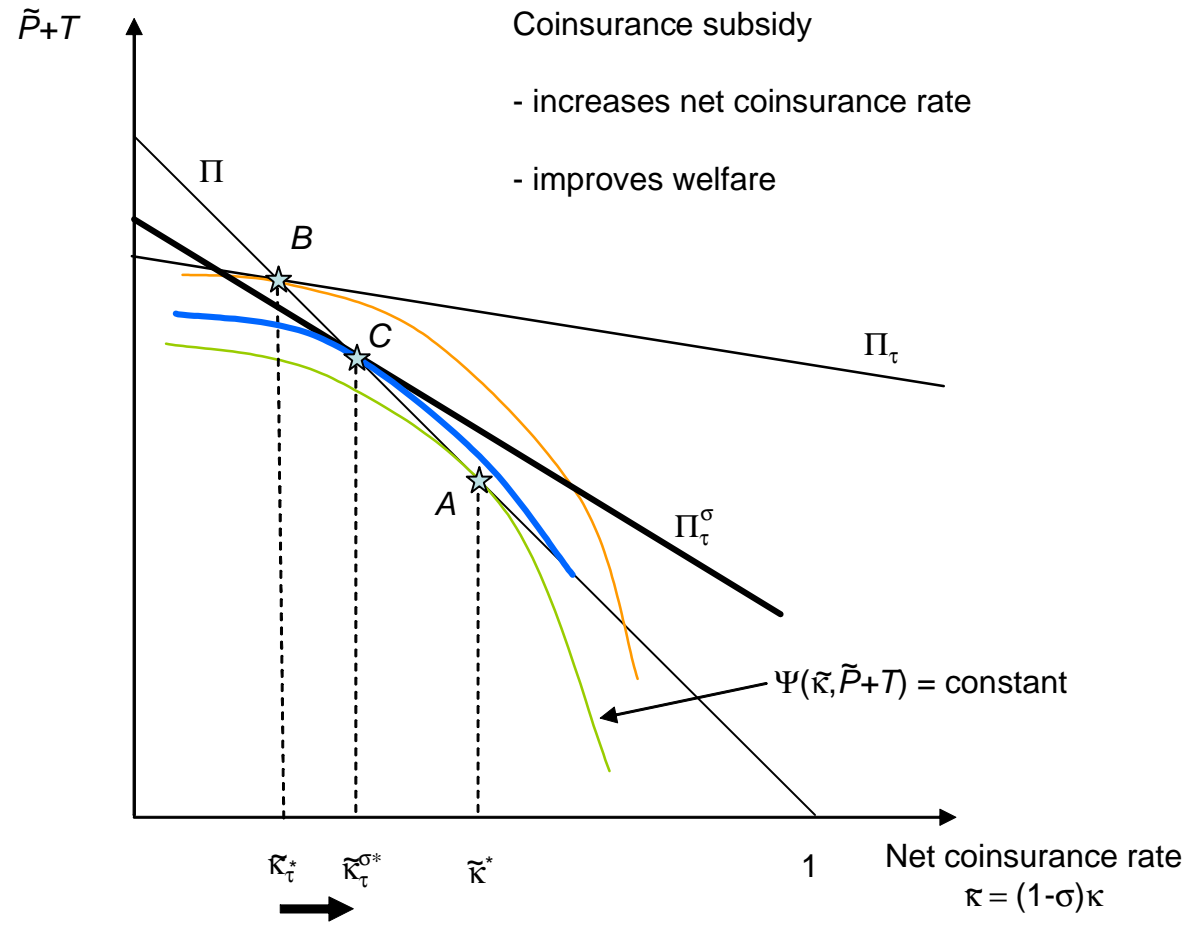
$$\frac{\tilde{P}}{(1 - \tau)} = \left(1 - \frac{\tilde{\kappa}}{(1 - \sigma)}\right) \bar{q}$$

Lump-sum taxes to finance the subsidies, T

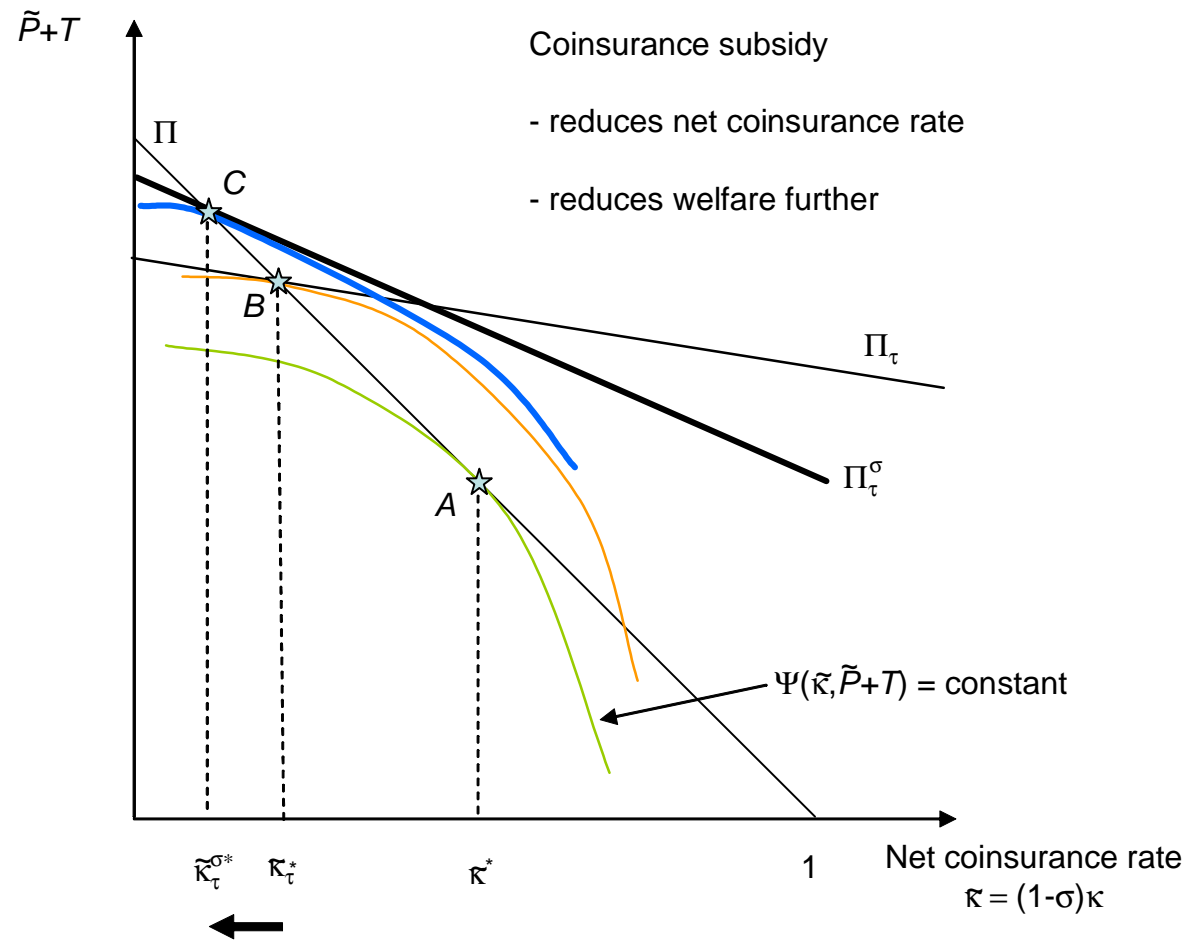
Expected utility

$$\Psi(\tilde{\kappa}, \tilde{P} + T)$$

WELFARE-IMPROVING COINSURANCE SUBSIDY



WELFARE-REDUCING COINSURANCE SUBSIDY



DATA

1993 Employer Health Insurance Survey (RWJ Foundation)

Cross section of plans offered by employers in 10 states in the US

Information on insurance plans - including coverage, premiums, coinsurance rates, etc.

Information on firms - employees, payrolls, unionization, etc.

Sub-sample of 6525 firms that

- offer insurance; - pay at least minimum wage; - offer at least one non-HMO / PPO plan

In this sample there are 7391 different insurance plans

26 percent of which are in firms that offer employees FSAs

TABLE 1: SUMMARY STATISTICS

	No FSA		With FSA	
	[<i>n</i> = 5487]		[<i>n</i> = 1904]	
	Mean	Std.dev	Mean	Std.dev
Insurance plan characteristics				
Single premium (\$)	160.3	77.1	152.7*	66.6
Family premium (\$)	392.4	159.7	385.1 ⁺	135.5
Coinsurance rate (%)	16.8	10.7	17.7*	8.7
Firm characteristics				
Number of employees in location	48.2	163.7	178.2*	426.0
Firm's age (years)	29.6	27.5	47.0*	40.2
Marginal tax rate (%)	23.7	7.4	25.4*	7.9
Payroll per worker (\$000)	25.4	17.9	28.7*	19.5

* (+) statistically significant at the 5% (10%) level

EMPIRICAL STRATEGY

Objective: estimate the average treatment effect of offering an FSA on coinsurance rates

Two econometric problems

Simultaneity - premiums and coinsurance rates jointly determined

- use exogenous regressors correlated with premiums but not coinsurance rate

Selection effects - "good" employers offer FSAs *and* provide generous insurance

- two-stage IV:

- (i) Probit to predict FSAs,

- (ii) use predicted probabilities as instruments in coinsurance rate regression

TWO ECONOMETRIC SPECIFICATIONS

1. Uniform treatment effect

$$\kappa = X\beta + F\gamma + \nu$$

where X = firm and plan characteristics

and F is (the predicted probability of having) an FSA dummy (equal to 1)

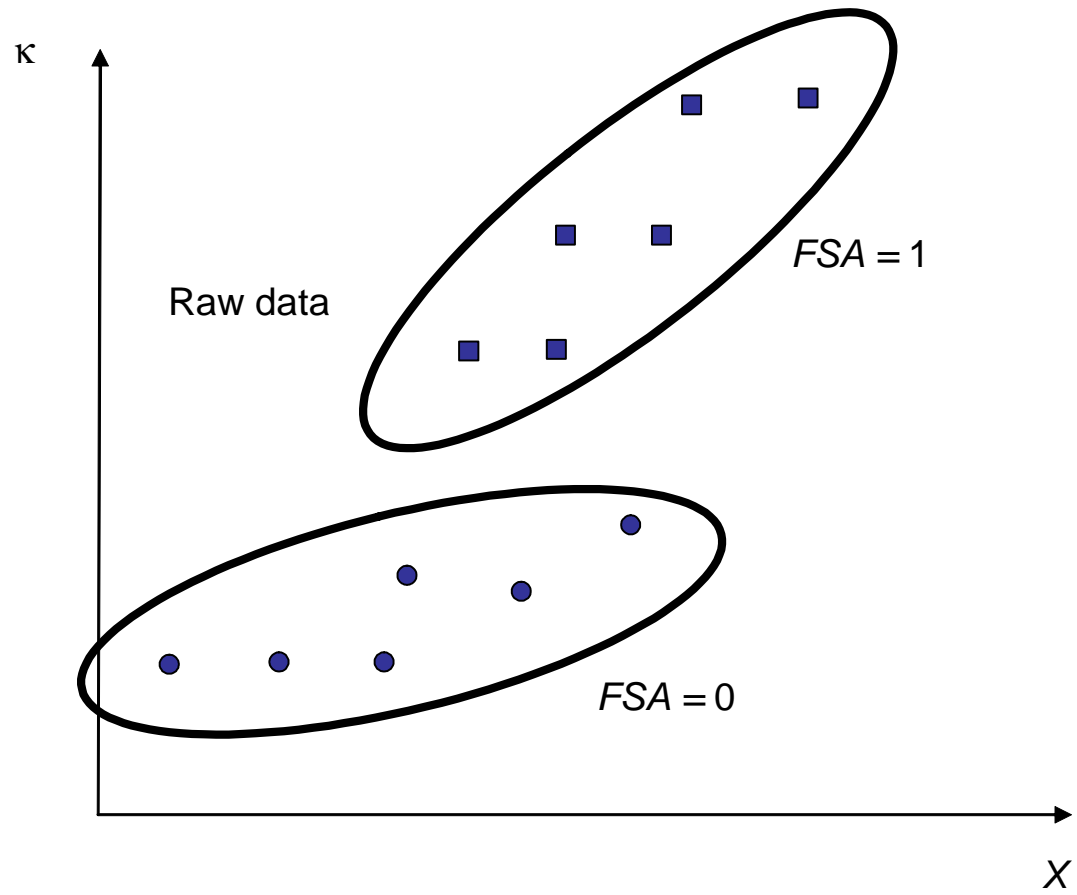
treatment effect is γ

2. Variable treatment effect

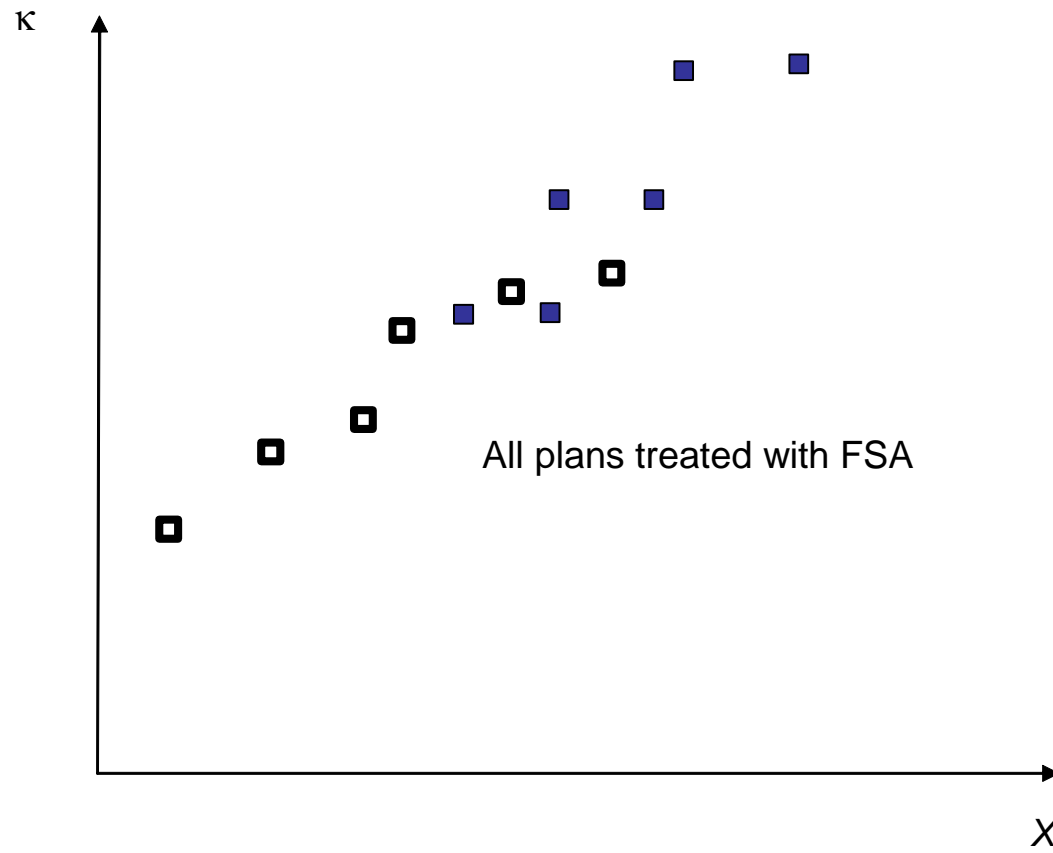
$$\kappa = X\beta + F\gamma + F(X - \bar{X})\delta + e$$

γ is average treatment effect (effect for a plan/firm with average X s)

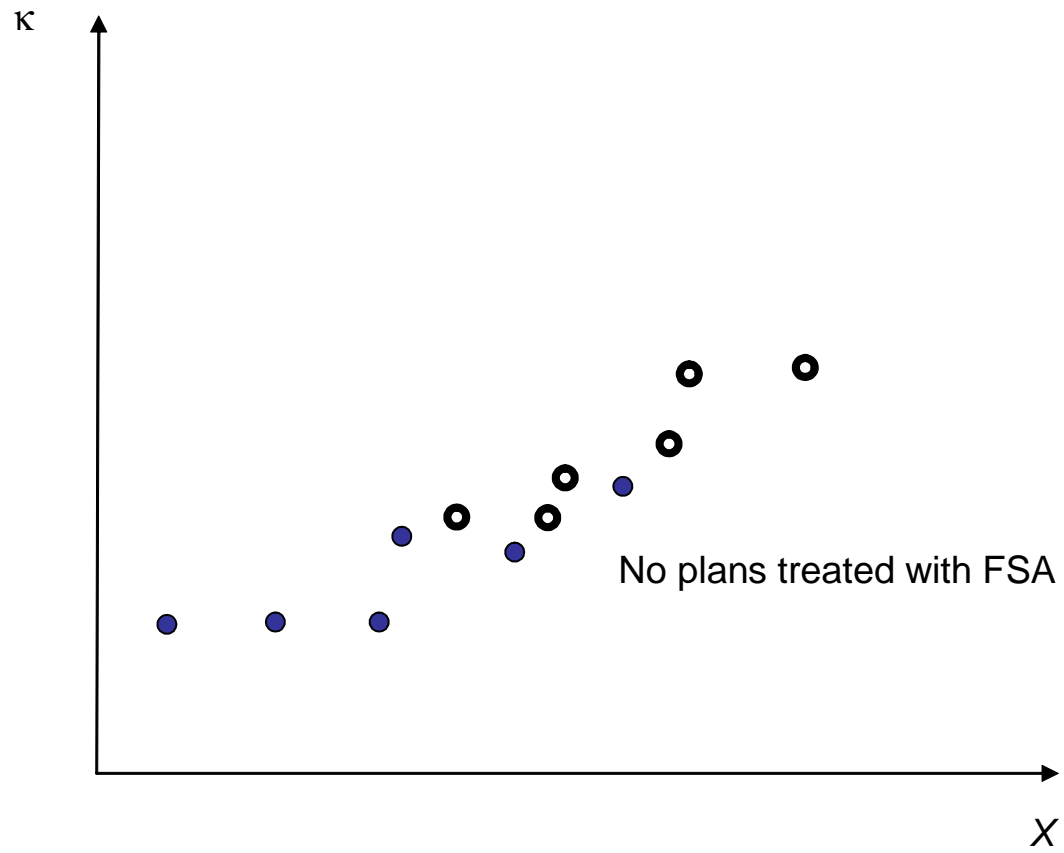
GEOMETRIC IDEA



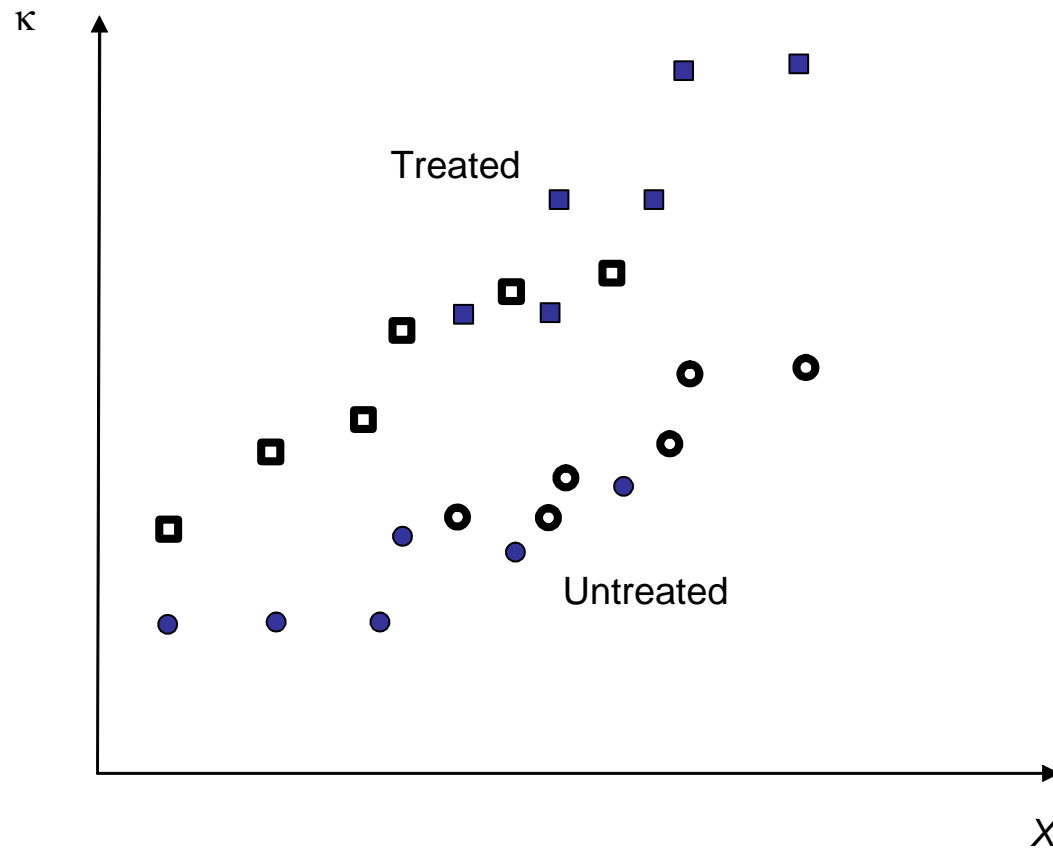
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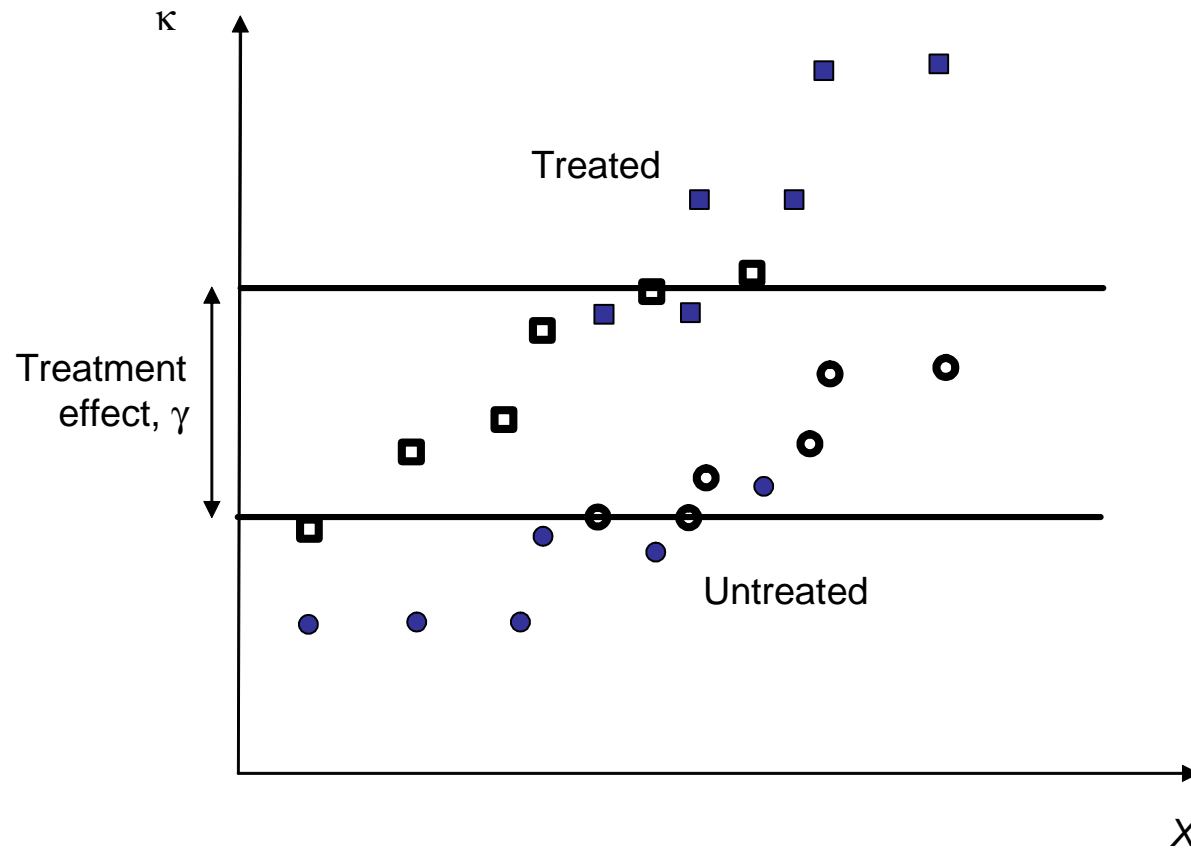
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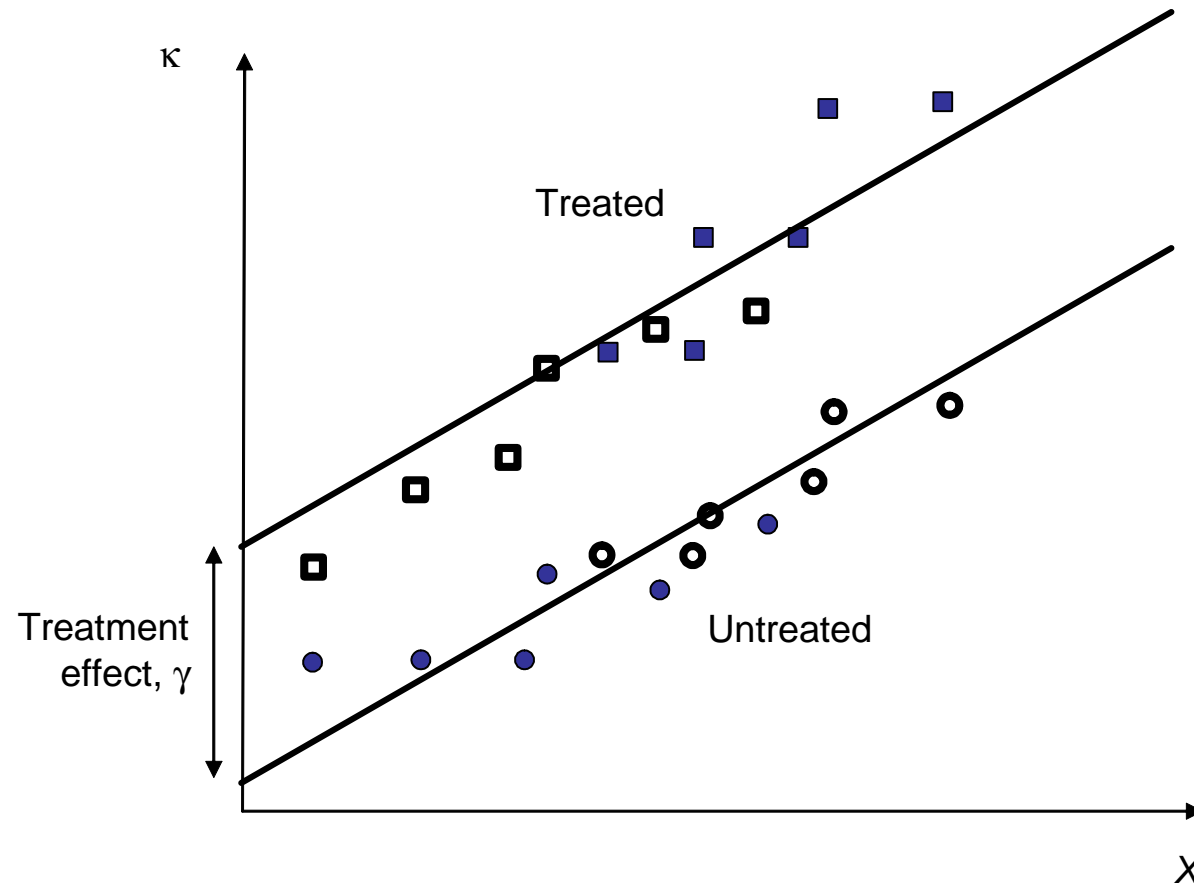
GEOMETRIC IDEA



UNIFORM TREATMENT SPECIFICATION WITH NO COVARIATES



UNIFORM TREATMENT SPECIFICATION WITH COVARIATES



VARIABLE TREATMENT SPECIFICATION

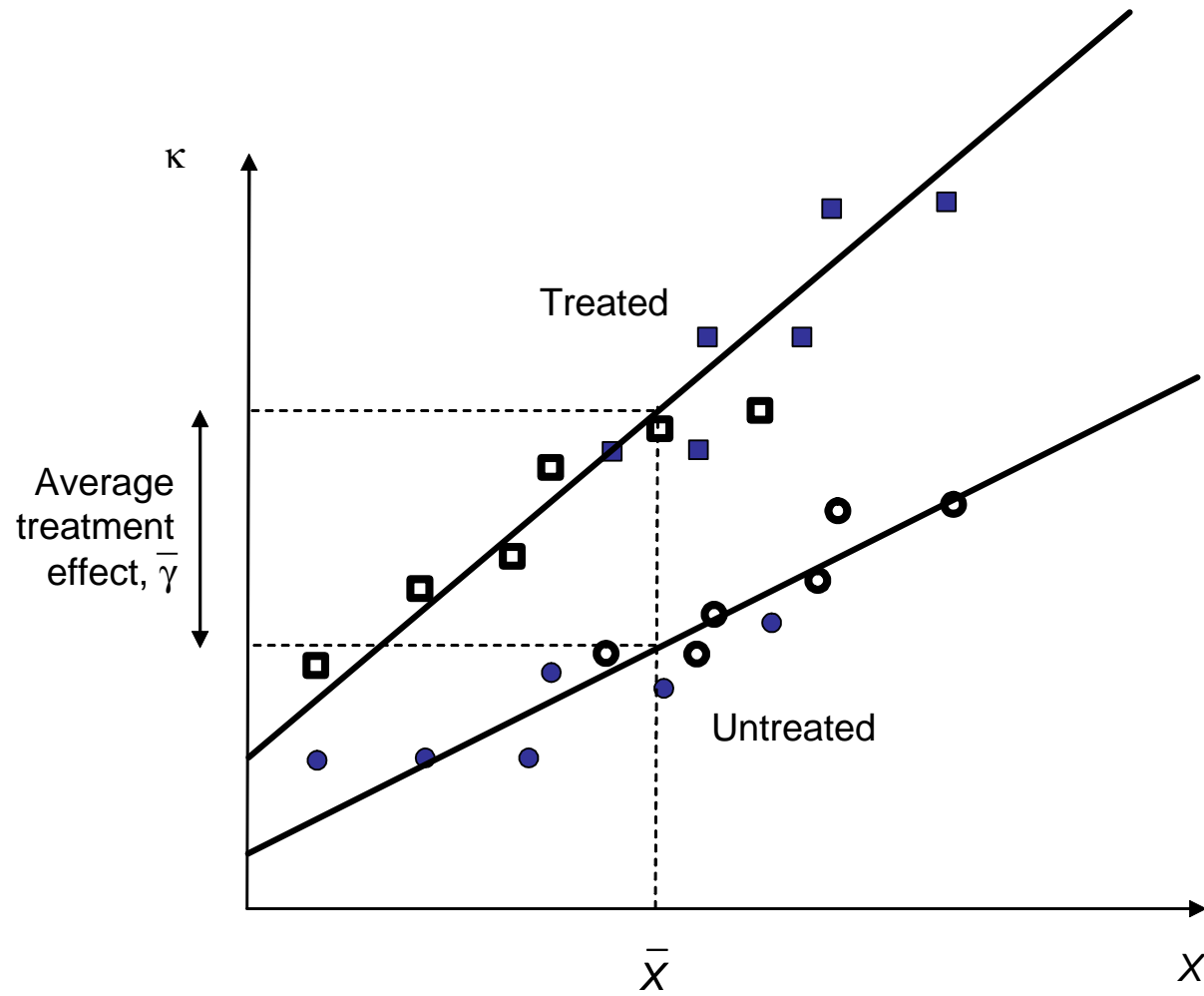


TABLE 2: FIRST-STAGE PROBIT FOR FSAS

Instruments	
Firm's age	0.005* (0.001)
Percent employees eligible for health insurance	0.003* (0.001)
Has location in other states	0.544* (0.038)
No competitor within state	-0.103* (0.050)
No competitor	-0.293* (0.102)
Exogenous regressors	
Marginal tax rate	0.010* (0.003)
+ other firm and plan characteristics	
<i>N</i>	7,391
Pseudo- R^2	0.171
χ^2	1104.3
Robust std errors in (). * significant at 5% level	

TABLE 3: ESTIMATION RESULTS OF THE COINSURANCE EQUATION

Dependent variable: κ	OLS		2SLS	
	(1)	(2)	(3)	(4)
FSA	0.742*	1.365*	4.069*	7.312*
	(0.262)	(0.342)	(1.005)	(1.927)
Other plan covariates	yes	yes	yes	yes
Interactions between FSA dummy and other covariates	no	yes	no	yes

EFFECTS ON NET COINSURANCE RATES

Average treatment effect on gross coinsurance rate

$$E[\hat{\kappa}^1(\bar{X}) - \hat{\kappa}^0(\bar{X})] = \gamma \approx 7.3$$

Average treatment effect on net coinsurance rate

$$E[\tilde{\kappa}^1(\bar{X}) - \tilde{\kappa}^0(\bar{X})] = (1 - \bar{\tau})\hat{\kappa}^1(\bar{X}) - \hat{\kappa}^0(\bar{X})$$

TABLE 4: MAGNITUDES

	Average increase in coinsurance, γ	Net coinsurance without FSA, $\tilde{\kappa}^0(\bar{X})$	Net coinsurance with FSA, $\tilde{\kappa}^1(\bar{X})$	Difference in means Average increase in $\tilde{\kappa}$
	(1)	(3)	(2)	(4) = (3)-(2)
Table 3, column (4)	7.31	15.56	15.71	0.15
	(1.93)	(0.46)	(1.06)	(1.16)

Std. errors in ().

TABLE 5: ROBUSTNESS CHECKS

	Average increase in coinsurance, γ	Net coinsurance without FSA $\tilde{\kappa}^0(\bar{X})$	Net coinsurance with FSA, $\tilde{\kappa}^1(\bar{X})$	Difference: Increase in $\tilde{\kappa}(\bar{X})$
	(1)	(3)	(2)	(4) = (3)-(2)
Include physician costs in place of state fixed effects	8.27 (2.18)	15.47 (0.52)	16.30 (1.21)	0.83 (1.32)
1st stage linear probability	8.38 (2.35)	15.20 (0.63)	16.20 (1.26)	1.00 (1.41)
<u>Dropping instruments</u>				
Firm's age	6.76 (2.38)	15.60 (0.62)	15.36 (1.25)	-0.24 (1.40)
% employees eligible for HI	7.43 (2.00)	15.55 (0.46)	15.79 (1.11)	0.24 (1.20)
Has location in other states	6.96 (2.82)	15.70 (0.61)	15.57 (1.56)	-0.13 (1.67)
Competitor in state	6.84 (1.88)	15.65 (0.46)	15.45 (1.03)	-0.20 (1.13)

Std. errors in ().