

Medicaid Crowd-Out of Long-Term Care Insurance with Endogenous Medicaid Enrollment

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Goals

- To examine the effectiveness of tax subsidies on private long-term care insurance (LTCI) demand
- To assess the magnitude of Medicaid crowd-out effect on LTCI demand

Long-Term Care (LTC)

- LTC: Services for those who need assistance with activities of daily living (Nursing Home, Home and Community Services, Informal Care)
- Total formal LTC expenditures: \$169 billion in 2005
(Nursing Home expenditures: \$122 billion in 2005)

(Kaiser Commission on Medicaid and Uninsured estimates based on CMS National Health Accounts data)

Nursing Home Cost: Concern of Financial Distress

- Average annual cost of nursing home care: \$56,000 in 1998
(AARP, 2001)
- 70th percentile of wealth distribution of single respondents of ages 65+ : \$56,000
(Health and Retirement Study)

Nursing Home Usage

- 40% of elderly decedents have used nursing home
(Kemper and Murtaugh (1991))

Financing

- Few (10%) have Private Long-Term Care Insurance (LTCI)
 - Many rely on Medicaid
 - Medicaid is a state/federal welfare program that pays for health services for the poor.
 - Medicaid eligibility rules require one's income and assets not to exceed certain limits.
- ⇒ exposed to the risk of asset depletion when nursing home use is needed

Government's Burden

- Reliance on Medicaid for Nursing Home
 - Total Nursing Home Care Expenditures: \$122 Billion
 - Medicaid's Share of total Nursing Home Expenditures: 44%
(CMS, National Health Accounts, 2005)
- Medicaid's Large Expenditures towards Nursing Home Care
 - Medicaid Expenditures on Nursing Home: 33%
 - Medicaid Nursing Home Users: 3%

(Kaiser Commission on Medicaid and Uninsured and Urban Institute estimates based on Medicaid Statistical Information System (MSIS))

Policy Proposal to enhance affordability of LTCI

:Tax Subsidies

(e.g. H.R. 6237 Tax Relief for Long-Term Care Act of 2008)

- Price Elasticity of LTCI demand
- Medicaid Crowd-Out of LTCI demand
 - Medicaid eligibility rules require one's income and assets not to exceed certain limits.
 - One should not have any private insurance to be eligible for Medicaid.
 - Medicaid has potential to discourage savings and private insurance purchases.

This Paper

- I develop and estimate a stochastic dynamic model of decisions on:
 - Private Long-Term Care Insurance (LTCI) Purchases
 - Medicaid Enrollment
 - Nursing Home Use
 - Savings
- I perform policy experiments to examine
 - Price Elasticity of LTCI demand
(How much LTCI demand would change if its premiums were reduced)
 - Medicaid Crowd-out Effect
(How much LTCI demand would change without Medicaid)

Key Features

- Endogenous Medicaid Enrollment
 - Explicitly account for state-specific Medicaid eligibility rules
- Endogenous Savings and Nursing Home Use
- Dynamic LTCI purchase decision

Medicaid eligibility rules

- Categorically Needy (CN) and Medically Needy (MN)

CN All states have categorically needy program that specifies income limit (\bar{I}_s) and asset limit (\bar{W}_s) for Medicaid eligibility.

MN In some states, people may enroll in Medicaid even if their income/assets exceed categorical thresholds, provided that their income and assets *net of their medical care cost* are at or below certain limits.

- Post-eligibility rules: Personal Needs Allowance

pna_s A Medicaid beneficiary in a nursing home should not have income exceeding personal needs allowance.

Model Description

- **Stochastic Dynamic Decision Model**

- Each period, **shocks** are realized
(e.g. shocks to health, income, medical care cost, and preference)
- Observing the shocks, individuals make decisions
 - (Choices) On health insurance, nursing home use, and savings
 - (Objective) In order to maximize expected lifetime utility
 - (Constraints) Subject to budget constraints, Medicaid eligibility rules, health transition functions, etc.

- **Dynamic Decisions**

- Current savings decision affects Medicaid eligibility in the next period
- Buying private long-term care insurance (LTCI) enables usage of a nursing home sometime in the future at low cost
- Nursing home use affects the probability of surviving to the next period

Agent's Problem (*1 period = 2 years)

$$\max_{d_a \in D_a} E \left[\sum_{a=a_0}^A \delta^{a-a_0} u_a(C_a, hi_a, nh_a; H_a, \epsilon_a) \mid \Omega_a \right]$$

s.t.

$$W_{a+1} = f^w(W_a, I_a, C_a, mc_a, \bar{W}_s, \bar{I}_s, pna_a)$$

$$H_{a+1} = f^h(H_a, a, nh_a; k)$$

$$p_a = f^p(a, hi_{a-1}, H_a)$$

$$I_a = f^i(e, a; \epsilon_a^i)$$

$$mc_a^{om} = f^{mc}(a, I_a; \epsilon_a^{mc}, k)$$

$$P(k=1) = f^k(a_0, e, W_{a_0}, H_{a_0})$$

where C_a is consumption, $(\bar{W}_s, \bar{I}_s, pna_a)$ is for Medicaid rules,

I_a is income, p_a is LTCI premium, k is type,

mc_a^{om} is out-of-pocket costs for medical services other than nursing home.

Choice Set

$$D_a = \{hi_a, nh_a, sr_a\}$$

- $hi_a \in \{0, 1, 2\}$: health insurance
 - $hi_a = 1$: LTCI (Long-Term Care Insurance)
 - $hi_a = 2$: Medicaid
 - $hi_a = 0$: neither
- $nh_a \in \{0, 1\}$ nursing home
 - $nh_a = 1$: nursing home use
 - $nh_a = 0$: no nursing home (incl. informal care)
- sr_a : savings rate
(a : age)

State Space

$$\Omega_a = \{s, a, e, H_a, W_a, hi_{a-1}, dr_a, nh_{a-1}; \epsilon_a, k\}$$

- $H_a \in \{0, 1, 2\}$: health status (ADL: Activities of Daily Living)
 - $H_a = 1$: #ADL < 3(Good)
 - $H_a = 2$: #ADL \geq 3(Poor)
 - $H_a = 0$: (Dead)
- s : state of residence
- e : education
- W_a : non-housing assets carried over to the age a
- dr_a : duration of LTCL ownership at age a
- ϵ_a : vector of shocks
- k : type (unobserved permanent heterogeneity)

Per-period Utility

$$u_a = \frac{C_a^{(1-\beta_1)} - 1}{1 - \beta_1} \exp(\epsilon_a^c) + U(L)_a I(hi_a = 1) \\ + U(M)_a I(hi_a = 2) + U(N)_a I(nh_a = 1)$$

where

$$U(L)_a = \beta_2 I(k = 1) + \beta_3 I(k = 2) + \beta_4 I(hi_{a-1} \neq 1) + \epsilon_a^l \\ U(M)_a = \beta_5 I(k = 1) + \beta_6 I(k = 2) + \beta_7 I(H_a = 2) + \epsilon_a^m \\ U(N)_a = \beta_8 I(k = 1) + \beta_9 I(k = 2) + \beta_{10} I(nh_{a-1} \neq 1) \\ + \beta_{11} I(H_a = 2) + \beta_{12} a + \beta_{13} a \cdot I(H_a = 2) + \epsilon_a^n$$

($hi_a = 1$: LTCL, $hi_a = 2$: Medicaid, $nh_a = 1$: Nursing home)

Budget Constraints

- $hi_a \neq 2$ (No Medicaid)

$$W_{a+1} = (1+r)W_a + I_a - C_a - p_a \cdot I(hi_a = 1, nh = 0) - mc^{nh} \cdot I(nh_a = 1) - mc_a^{om}$$

- $hi_a = 2$ & $nh_a = 0$ (Medicaid and no-nursing home)

$$W_{a+1} = (1+r) \min\{W_a, \bar{W}_s\} + \min\{I_a, \bar{I}_s\} - C_a$$

- $hi_a = 2$ & $nh_a = 1$ (Medicaid and nursing home)

$$W_{a+1} = (1+r) \min\{W_a, \bar{W}_s\} + \min\{I_a, pna_s\} - C_a$$

Data

- **Health and Retirement Study (1998 to 2002)**
 - Individual Level Data
 - LTCI purchase, Duration of LTCI holding, Medicaid Enrollment, Health outcomes, Nursing Home use, Wealth
 - State-of-Residence

Estimation

- Simulated Maximum Likelihood
- Kernel Smoothed Frequency Simulator

Health Status by Age

Age	(# obs.)	Poor Health (%)		Good Health (%)	
		Actual	Pred.	Actual	Pred.
73-74	(88)	6.8	5.8	93.2	94.2
75-76	(127)	7.1	5.4	92.9	94.6
77-78	(158)	10.8	12.6	89.2	87.4
79-80	(173)	8.7	11.2	91.3	88.8
81-82	(174)	14.9	16.7	85.1	83.3
83-84	(155)	19.4	19.9	80.6	80.1
85-86	(139)	16.5	19.5	83.5	80.5
87-88	(124)	21.0	24.5	79.0	75.5

(1) $\chi^2 = 3.51$, $\chi^2(.05, 1) = 3.84$

(2) The age group 71-72 has fewer than 50 observations.

Nursing Home Choice by Age

Age	(# obs.)	NH use (%)		No NH use(%)	
		Actual	Pred.	Actual	Pred.
73-74	(88)	1.1	1.5	98.9	98.5
75-76	(127)	1.6	1.6	98.4	98.4
77-78	(158)	2.5	2.5	97.5	97.5
79-80	(173)	4.0	3.2	96.0	96.8
81-82	(174)	4.6	4.1	95.4	95.9
83-84	(155)	7.1	7.9	92.9	92.1
85-86	(139)	10.8	11.8	89.2	88.2
87-88	(124)	12.1	15.1	87.9	84.9

(1) $\chi^2 = 1.17$, $\chi^2(.05, 1) = 3.84$

(2) The age group 71-72 has fewer than 50 observations.

Health Insurance Choices by Age

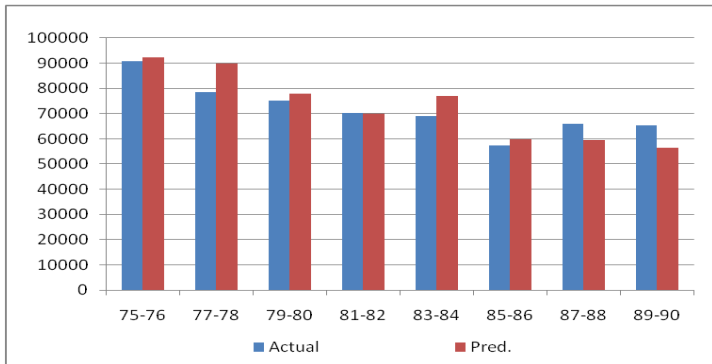
Age	(# obs.)	LTCL (%)		Medicaid (%)		Neither (%)	
		Actual	Pred.	Actual	Pred.	Actual	Pred.
73-74	(88)	15.9	13.8	18.2	11.7	65.9	74.5
75-76	(127)	15.7	13.2	18.1	12.9	66.2	73.9
77-78	(158)	12.0	12.1	17.7	14.2	70.3	73.7
79-80	(173)	11.6	10.2	17.3	16.1	71.1	73.7
81-82	(174)	7.5	8.2	15.5	16.4	77.0	75.4
83-84	(155)	6.5	8.3	15.5	17.0	78.0	74.7
85-86	(139)	9.4	7.1	23.0	20.0	67.6	72.9
87-88	(124)	6.5	8.3	27.4	22.3	66.1	69.4

(1) $\chi^2 = 4.31$, $\chi^2(.05, 2) = 5.99$

(2) The age group 71-72 has fewer than 50 observations.

Model Fit

Mean Assets by Age



Price Elasticity of LTCI demand

- If the premium is reduced by half, the LTCI demand increases by 4.2% (Price Elasticity of LTCI demand: -0.08)

⇒ The effect of tax subsidies on LTCI demand is limited

Medicaid Crowd-Out of LTCI demand

- Without Medicaid, LTCI demand would increase by 5.3 %
- Without Medicaid, median assets would increase by 15.3 %
- Without Medicaid, nursing home use would decrease by 24.4 %

- I develop and estimate a stochastic dynamic decision model
 - To investigate the effectiveness of policy to stimulate LTCI demand
 - To explore Medicaid crowd-out effects
 - Findings
 - Small impact of tax incentives on LTCI demand
 - Small Medicaid crowd-out effect on LTCI demand
- ⇒ Limited impact of tax subsidies

Thank you