Medicaid Insurance in Old Age

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  - No income or asset tests
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  - Pays for most medical services, but not all (e.g., nursing homes)
- Medicaid: Means-tested health insurance that assists the poor or impoverished
  - Medicaid assists 70% of nursing home residents.
  - Nursing homes are very expensive.

Questions

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- Is Medicaid of about the right size?
- Who pays for Medicaid?

AHEAD cohort of HRS

- Household heads aged 70 or older in 1993/4
- Consider only the retired singles
- Follow-up interviews in 1995/6, 1998, 2000, 2002, 2004, 2006, 2008, 2010
- Asset, medical expense data begins in 1996 (1994 data faulty), uses 2,673 individuals
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  average annuity income from Social Security + defined benefit pension plans over sample period
- 1996-2010 waves of the Medicare Current Beneficiary Survey for information on payments (coded the same way as AHEAD)

Share receiving Medicaid

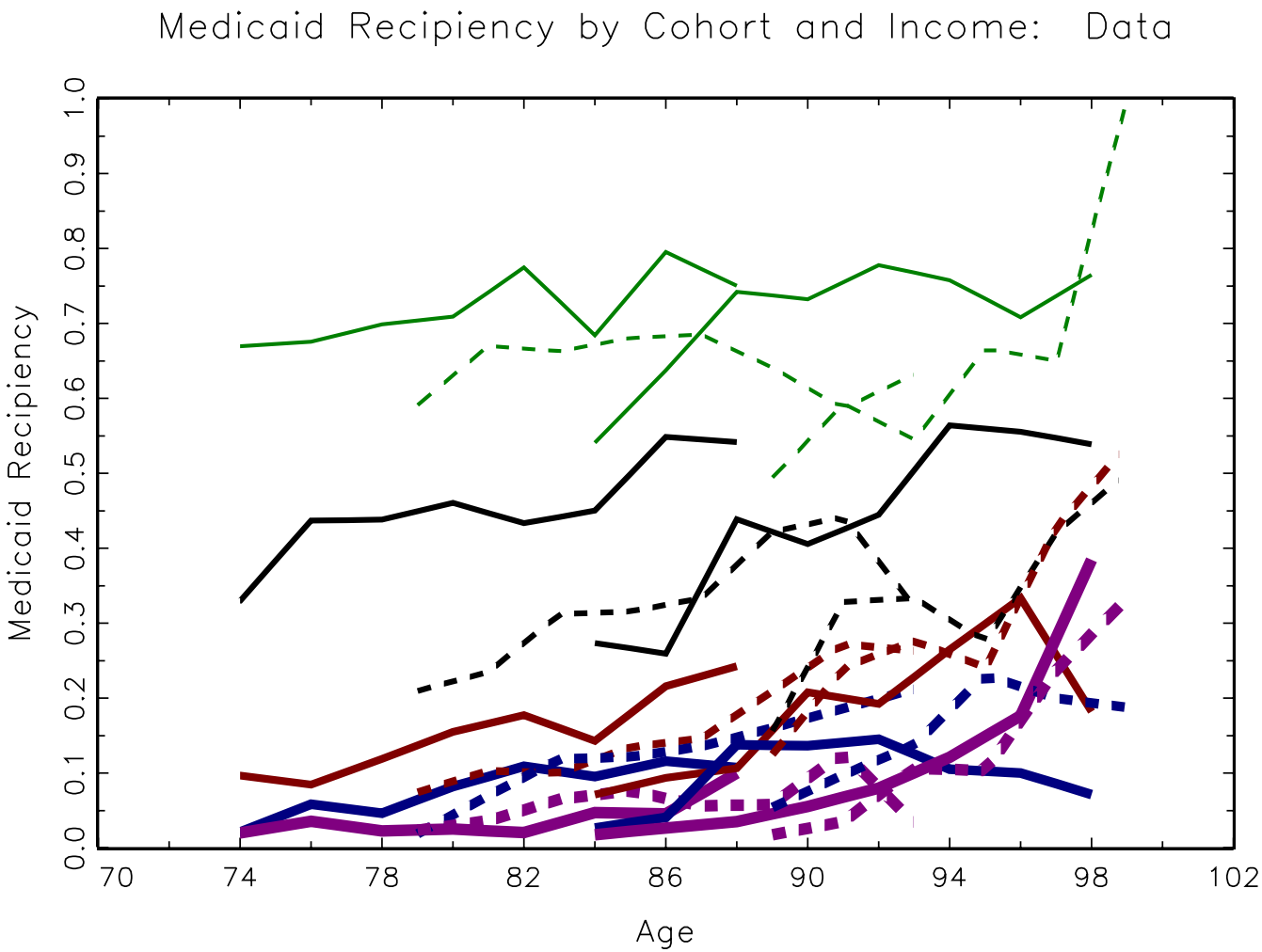

Figure: Fraction receiving Medicaid by age, birth cohort and permanent income quintile.

Forces working against redistribution

- High income live longer than low income. Life expectancy at age 70
  - 10th percentile of income distribution: 10.4 years.
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- Two pathways to qualify for Medicaid
  - Categorically needy: low income
  - Medically needy: low income net of medical spending
    - High income retirees wind up on Medicaid only if they have catastrophic medical spending

Permanent Income Quintile	Average Payment	Recipiency Rate	Average Payment/ Beneficiary
Bottom	9,080	.70	12,990
Fourth	5,720	.42	13,690
Third	2,850	.16	18,350
Second	1,950	.08	24,360
Top	1,280	.05	23,790

Table: Average Medicaid payments, recipiency, and payments per beneficiary, 1996-2010 waves of the Medicare Current Beneficiary Survey.

Literature on Medicaid/Medicare insurance

- Lots of work on health effects of Medicaid/Medicare
  - **Big effects:** Card et al. 2009, Finkelstein et al. 2012; Chay et al. 2010; Yang et al. 2009.
    Small/zero effects: Brook et al. 1983; Fisher et al. 2003; Finkelstein and McKnight 2008
- Less on Medicaid/Medicare's effect on savings/medical expenses:
  - Scholz et al. 2006; Brown and Finkelstein 2008; De Nardi, French, and Jones 2010; Kopecky and Koreshkova 2013; Braun, Kopecky and Koreshkova 2015
- Most papers assume exogenous medical expenditure and/or little heterogeneity and do not focus on redistribution.

Key model features

- Single people aged 70 and older
- Consumption of medical and non-medical goods, and savings decision
- Medical care does not affect longevity

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- Single people aged 70 and older
- Consumption of medical and non-medical goods, and savings decision
- Medical care does not affect longevity
  - Consistent with many papers
  - Much of medical spending, especially late in life, is on long-term care
  - Spending improves quality of life, not length of life

Nursing home quality varies a lot

Model

- Single people aged 70 and older
- Flow utility from medical and non-medical consumption

$$u(c_t, m_t, \mu_t) = \frac{1}{1-\nu} c_t^{1-\nu} + \mu_t \frac{1}{1-\omega} m_t^{1-\omega},$$

where:

$t =$ age;

$c_t =$ non-medical consumption;

$m_t =$ consumption of medical goods and services, includes

- nursing home, drugs, doctor visits;
- items paid out of pocket as well as by Mediciad, Medicare, or other insurers

$\mu_t =$ stochastic medical needs shifter.

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- Mortality rates vary by:
  - gender
  - permanent income
  - age
  - health

$\Rightarrow$ Healthy, rich women live longer than poor, sick, men.

Medical needs shocks components

- A deterministic function of age, gender, and health status.
- A persistent shock.
- A transitory shock.

$$
\begin{aligned}
\log(\mu_t(\cdot)) &= f(\text{age, health status, } \psi_t), \\
\psi_t &= \zeta_t + \xi_t, \quad \xi_t \sim N(0, \sigma_\xi^2), \\
\zeta_t &= \rho_m \zeta_{t-1} + \epsilon_t, \quad \epsilon_t \sim N(0, \sigma_\epsilon^2).
\end{aligned}
$$

Two key features of the insurance system

- Private, Medicare, Veterans Administration health insurance
  - pay a share of total medical expenditure $m_t(1 - q(h_t))$
  - Using data from the MCBS we find
    - $q(\text{nursing home}) = .68$
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- Social insurance programs (Medicaid and Supplemental Security Income (SSI))
  - Medicaid *utility* floors

Medicaid as providing utility floor

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- But we (the econometricians) do not fully observe medical needs directly.
- So we need a model that satisfies the criteria:
  - Medicaid transfers vary with medical needs.
  - Model matches distribution of Medicaid payments.

Medicaid as providing utility floor

Calculating transfers for the medically needy...

- Government computes minimum expenditure $\underline{x}_{mt} = c_t + q(h_t)m_t$ to achieve

$$\frac{1}{1-\nu}c_t^{1-\nu} + \mu_t \frac{1}{1-\omega}m_t^{1-\omega} = \underline{u},$$

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- Government makes transfer b_{mt} given expenditure $\underline{x}_{mt}$

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- Given exogenous transfer, the person makes optimal decisions.

Modeling Medicaid tests and transfers

- *Categorically needy*: assets and income test
- *Medically needy*: total resources low compared to medical expenses
- Two eligibility criteria

Timing

At the beginning of the period,

- the individual's health status and medical needs shocks are realized,
- needs-based transfers are given,
- the individual chooses consumption, medical expenditures, and savings,
- the survival shock hits.

Recursive formulation

$$
\begin{aligned}
V_t(a_t, g, h_t, I, \zeta_t, \xi_t) = \max_{c_t, m_t, a_{t+1}, I_{Mt}} \Bigg\{ & \frac{1}{1-\nu} c_t^{1-\nu} + \frac{\mu(h_t, \zeta_t, \xi_t, t)}{1-\omega} m_t^{1-\omega} \\
& + \beta s_{g,h,I,t} E_t \Big(V_{t+1}(a_{t+1}, g, h_{t+1}, I, \zeta_{t+1}, \xi_{t+1}) \Big) \\
& + \beta (1 - s_{g,h,I,t}) \frac{\theta}{1-\nu} (e(a_{t+1}) + k)^{1-\nu} \Bigg\}, \\
s.t. \quad a_{t+1} &= a_t + y_n(r a_t + y_t) + b_t I_{Mt} - c_t - m_t q(h_t) \geq 0, \\
b_t &= b(t, a_t, g, h_t, I, \zeta_t, \xi_t, \underline{u}) \\
a_{t+1} &\leq A_d, \text{ if } I_{Mt} > 0.
\end{aligned}
$$

Two-step estimation strategy

- First step: estimate parameters of income, health, mortality, and co-pay profiles.

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- Second step: taking as given the estimated first-step parameters, choose preference parameters, utility floor, and medical needs shocks to match
  - Median assets
  - Medicaid recipiency rate
  - Median and 90th percentile of out-of-pocket medical expenditures
  - First and second autocorrelations of medical expenditures

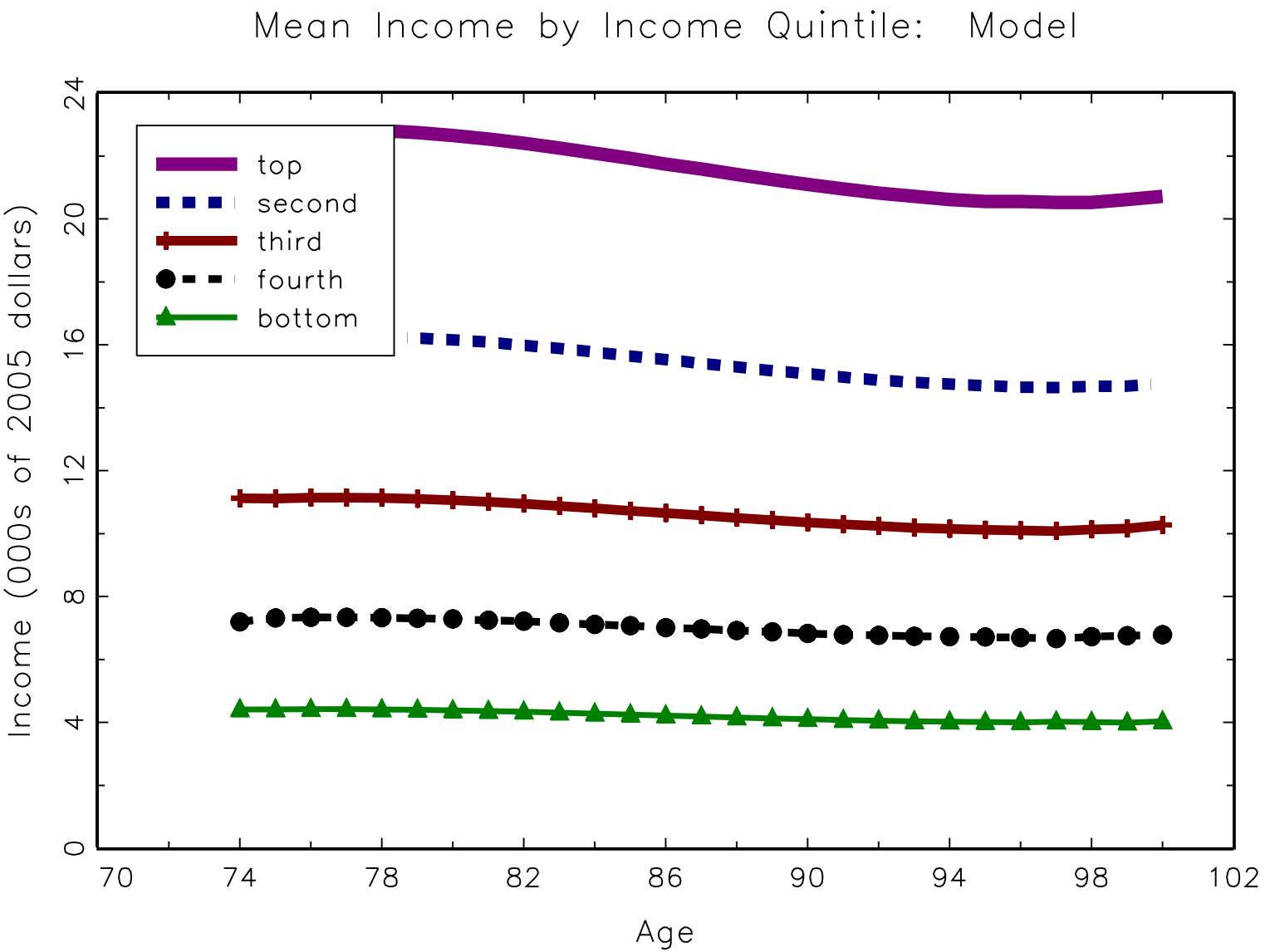
  by PI quintile, cohort and age, using the method of simulated moments (MSM).

Results from first step estimation

Look at

- Income quintiles
- Life expectancy
- Nursing home risk

Income quintiles by age



Health and Mortality

- We model current health $\in \{\text{good}, \text{bad}, \text{nursing home}, \text{dead}\}$ as a function of
  - past health, gender, permanent income, age
- Starting with the initial joint distribution of the state variables, we simulate demographic histories using the estimated transition probabilities.

Income Percentile	Males: Nursing Home	Males: Bad Health	Males: Good Health	Females: Nursing Home	Females: Bad Health	Females: Good Health	All
10	1.65	6.02	7.51	2.48	10.01	12.01	10.44
50	1.69	7.32	9.47	2.73	11.99	14.26	12.53
90	1.75	8.81	11.31	3.00	13.94	16.15	14.39
Men							9.71
Women							13.55
Bad Health							10.69
Good Health							13.99

Table: Life expectancy at age 70.

	Males		Females		
Income Percentile	Bad Health	Good Health	Bad Health	Good Health	All†
10	26.4	30.1	41.2	45.2	40.7
50	27.2	32.0	43.6	47.9	43.3
90	27.2	32.4	44.4	49.0	43.9
Men					30.6
Women					46.1
Bad Health					39.9
Good Health					45.0

Table: Percent ever entering a nursing home, people alive at age 70.

Second step estimates

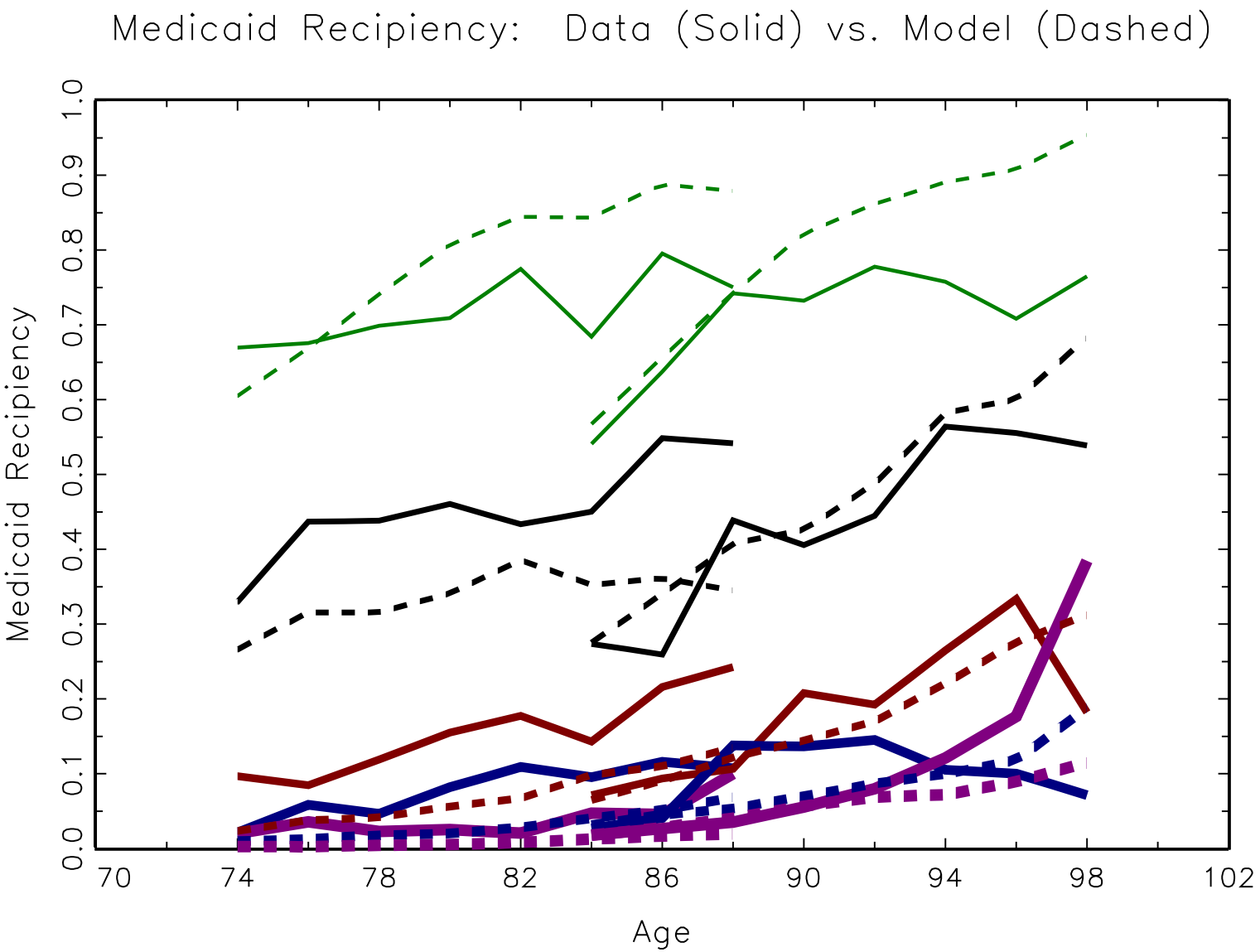
$$\text{flow utility} = \frac{1}{1-\nu} c_t^{1-\nu} + \mu_t \frac{1}{1-\omega} m_t^{1-\omega}$$

$$\text{bequest utility} = \frac{\theta}{1-\nu} (e(a_{t+1}) + k)^{1-\nu}$$

Estimated parameters:

- $\beta = .994$, $\nu = 2.83$, $\omega = 2.99 \Rightarrow$ model-predicted price elasticity of medical expenditure = 0.25.
- Categorically needy income limit = \$6,420.
- Utility floor (consumption equivalent) = \$5,260.
- Bequest motives parameters imply MPC out of terminal wealth of 17% and bequest threshold of \$3,600.

Medicaid recipiency



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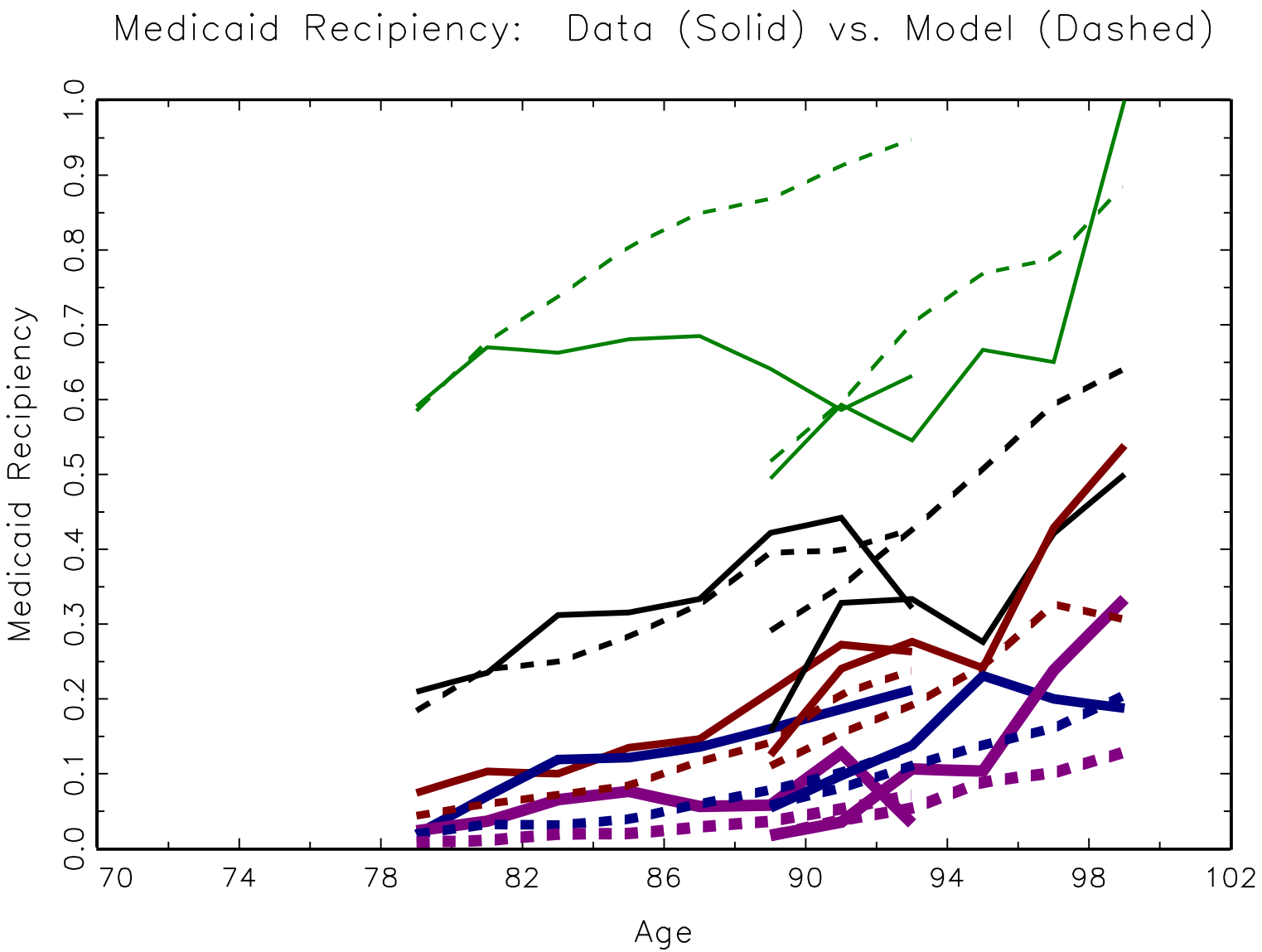

Income Quintile	Medicaid payments		Out-of-pocket expenses		
	MCBS Data	Model	MCBS Data	AHEAD Data	Model
Bottom	9,080	10,070	4,050	2,550	2,210
Fourth	5,720	7,960	5,340	4,270	3,800
Third	2,850	6,000	6,470	5,050	6,330
Second	1,950	3,910	7,300	6,360	8,500
Top	1,280	2,250	8,020	7,000	10,600
Men	2,850	3,780	5,440	4,760	8,280
Women	4,410	5,980	6,470	5,230	6,420

Table: Average Medicaid payments and out-of-pocket expenses.

Changing Medicaid

Fix preference parameters at baseline estimates and

- Reduce consumption value of both categorically and medically needy floors by 10%
- Increase consumption value of both floors by 10%

Permanent Income Quintile	(1) Reduction in PDV of Payments	(2) Compensating Variation	(3) Ratio of (2)/(1)
Bottom	4,500	6,300	1.40
Fourth	4,000	5,000	1.25
Third	2,900	4,400	1.52
Second	2,200	4,100	1.86
Top	1,400	4,400	3.14
Men	1,300	1,100	0.85
Women	3,100	5,600	1.81
Good Health	2,600	4,800	1.85
Bad Health	3,300	5,000	1.52

Table: The costs and benefits of cutting Medicaid by 10%.

Permanent Income Quintile	(1) Payment Increase	(2) Compensating Variation	(3) Ratio (2)/(1)
Bottom	4,700	2,600	0.55
Fourth	4,200	3,100	0.74
Third	3,100	3,600	1.16
Second	2,300	2,900	1.26
Top	1,300	2,600	2.00
Men	1,400	600	0.43
Women	3,300	3,500	1.06
Good Health	2,500	3,000	1.20
Bad Health	3,500	3,000	0.86

Table: The costs and benefits of increasing Medicaid payments by 10%.

Permanent Income Quintile	(1) Marginal Valuation	(2) Tax Cost
Bottom	0.55	0.20
Fourth	0.74	0.29
Third	1.16	1.01
Second	1.26	2.00
Top	2.00	4.59

Table: The benefits of increasing Medicaid payments by 10% and their tax cost.

Key Findings

- High income people ...
  - receive significant Medicaid transfers
  - value these transfers a lot
- Medicaid provides valuable insurance and its size is about right.