Life Cycle Responses to Health Insurance Status

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Summary

- This paper studies the effects of exogenous changes in health insurance coverage on
  1. dynamic optimal allocation (consumption, leisure, oop health expenditures)
  2. status (health, wealth and survival rates)
  3. welfare
- It formulates and estimates an elegant structural model in which mortality and morbidity risk depend on health status.
- Instantaneous utility is defined over consumption, leisure and bequeathed wealth but not over on health status.

$$\mathcal{U}_t \equiv U(C_t, \ell_t) + \beta \left(1 - \exp[-\lambda^m(H_t)]\right) U^m(W_{t+1})$$

$$U(C, \ell) = \left[\mu_C C^{1-\gamma} + (1 - \mu_C)\ell^{1-\gamma}\right]^{\frac{1}{1-\gamma}}$$

$$U^m(W) = \mu_m \frac{W^{1-\gamma}}{1-\gamma}.$$

$$V_t = \max_{\{C_t, I_t, \ell_t\}_t^{T^m}} \mathcal{U}_t + \mathrm{E}_t \left\{ \sum_{s=t+1}^{T^m} \beta^{s-t} \mathcal{U}_s \mid H_t \right\}$$

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Summary (II): model

- Health is modeled as a durable good with age increasing depreciation. Joint inclusion of leisure and expenditures in the production of health:

$$H_{t+1} = \left(1 - \delta_t - \phi_t \epsilon^s_{t+1}\right) H_t + A_t I^g(H_t, I_t, \ell_t)$$

$$d_t = d_0 \exp[g^d t], \quad d \in \{\delta, \phi\},$$

$$A_t = A_0 \exp[g^A (t + \kappa)],$$

$$I^g(H, I, \ell) = I^{\eta_I} \ell^{\eta_\ell} H^{1-\eta_I-\eta_\ell}, \quad \eta_I, \eta_\ell \in (0, 1)$$

- Budget constraint

$$OOP^x_t(I_t) = P^I_t I_t - \mathbb{1}_X \mathbb{1}_D (1 - \psi)(P^I_t I_t - D_t)$$

$$Y^x_t(\ell_t) = \mathbb{1}^R_t Y^R + (1 - \mathbb{1}^M \tau) w_t (1 - \ell_t),$$

$$W_{t+1} = \left[W_t + Y^x_t(\ell_t) - C_t - OOP^x_t(I_t) - \Pi^x_t\right] R^f$$

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Table 5: Data sources

Variables	Data (2010, 2011), and explanations
W	Survey of Consumer Finances (SCF), Federal Reserve Bank. Financial assets held.
H	National Health Interview Survey (NHIS), Center for Disease Control. Self-reported health status (phstat) where Poor=0.10, Fair=0.825, Good=1.55, Very good=2.275, Excellent=3.0.
S	National Vital Statistics System (NVSS), Center for Disease Control. Survival rates
I	Medical Expenditures Survey (MEPS), Agency for Health Research and Quality. Total health services mean expenses per person with expense and distribution of expenses by source of payment, divided by price of medical goods and services P_I.
OOP	Consumer Expenditures Survey (CEX), Bureau of Labor Statistics. Table 3, average annual expenditures and characteristics, by age of reference person. Healthcare minus Health insurance plus 50% Personal care products and services.
ℓ	American Time Use Survey (ATUS), Bureau of Labor Statistics. Share of usual hours not worked per week, 1-uhrsworkt/40
R^f	Federal Reserve Bank of St-Louis (n.d.).
Y^R	Average monthly Social Security benefit for a retired worker Social Security Administration (n.d.).
w_t	Median usual weekly earnings of full-time wage and salary workers by selected characteristics, 2010 annual averages Bureau of Labor Statistics (2011, Tab 1)

Comments on data

- Why so many different data sources? Why not PSID or HRS? Info on the joint distribution of the control and state variables?
- You only consider cross-sectional data sources (e.g. W_t and w_t). Don't you worry about cohort effects?
- **Wealth**: do you consider debts? Why don't you consider housing equity?
- Wealth includes pension wealth which is not bequeathable. Definition Y_R? Why don't you abstract from a bequest motive ($\mu_M = 0$)?
- Definition Health status (H) looks rather arbitrary. Have you performed sensitivity analysis?

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Simulation and estimation

- " We initialize state space $Z = (H, W)$ using draws from the population wealth and health levels at age 16". **Question:** do you have information on the joint distribution of wealth and health?
- Almost all preference parameters (orange) are calibrated. health production technology parameters also calibrated:

$$\Theta^c = (T, \kappa, \lambda_2^s, \xi^m, \xi^s, P_0^I, g^P, A_0, g^A, \psi, \Pi, \Pi^M, D_0, g^D, \tau, Y^R, R^f, \eta_I, \eta_\ell, \beta, \mu_C, \mu_\ell, \mu_m)$$

$$\Theta^e = (\lambda_0^m, \lambda_1^m, \lambda_0^s, \lambda_1^s, \delta_0, g^\delta, \phi_0, g^\phi, \gamma).$$

- SME of $\widehat{\Theta}_e$ is given as

$$\hat{\Theta}^e = \underset{\Theta^e}{\operatorname{argmin}} [\hat{\mathbf{M}}(\Theta) - \mathbf{M}]' \Omega [\hat{\mathbf{M}}(\Theta) - \mathbf{M}]$$

- Theoretical *life cycle moments* $\widehat{M}(\Theta)$ are computed over 5-year intervals between the age of 20 and 80, and involve out-of-pocket expenditures, leisure, wealth, and health.
- However, 52 population moments M obtained from cross-section surveys. Only valid procedure if there are no cohort effects…….
- Overid test?

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Comments: model