Moral Hazard and Long-Term Care Insurance

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INTRODUCTION

Background

- The financing of Long-term care (LTC) is challenging, and LTC insurance (LTCI) is often considered a solution to the financing challenge.
- An estimate of the extent that insurance affects subsequent utilization (i.e., ex post moral hazard) is central to pricing and long-run robustness of the private LTCI market
- However, there is little empirical evidence on the ex post moral hazard effects of private LTCI

Related Studies

- Grabowski and Gruber (2007) find no evidence of moral hazard. However, their study only examines Medicaid-funded nursing home use
- Li and Jensen (2011) find that individuals with LTCI are more likely to use nursing home care. However, their instrumental variables may be conceptually problematic.

Research Objective

- To provide a rigorous estimate of moral hazard in private LTCI markets

ANALYTICAL MODEL

Potential endogeneity issue

Individuals who own LTCI may be different from individuals who do not have LTCI in unobservable ways that may correlate with LTC utilization.

Instrumental variable (IV) approach

- Our IV is the individuals' tax itemization status at t-1 wave: individuals who itemize are more likely to purchase LTCI (since LTCI premiums are treated as tax deductions or credits in some states). Further, using a lagged version avoids the potential for simultaneity if LTCI purchase induces itemization.
- To strengthen our IV exogeneity, we use a combination of propensity score (PS) matching and IV approaches.
- First, we conduct a PS matching procedure to select (without replacement), for each individual who itemizes deductions (at t-1), a comparable individual who does not itemize deductions (at t-1).
- Next, we apply our IV procedure to this matched subset of observations

Two-stage residual inclusion (2SRI) IV models

$$logit\big(P(LTCI_{it}=1)\big)=\beta_0+\beta_1 IV_{it-1}+\beta_2 X_{it}+\beta_3 Year_t$$

$$logit\big(P(Utilization_{it}=1)\big)=\gamma_0+\gamma_1 LTCI_{it}+\gamma_2 X_{it}+\gamma_3 Year_t+\widehat{r_{it}}$$

where Utilization is individual i's LTC use at t, LTCI is the LTCI ownership, IV is the instrumental variable, X is a vector of individual-level controls, Year is the year fixed effects, and $\widehat{r_{it}}$ is the response residuals from the first-stage model.

RESULTS

Table 1. Summary Statistics on the PS Matched Sample, 1996-2012

	Lagged Itemization Status = 0 (N=26,438)	Lagged Itemization Status = 1 (N=26,438)	P Value
Demographics and Socioeconomic Status			
Age	67.4 (9.6)	67.5 (9.6)	0.502
Female (%)	56.8	56.6	0.568
Black (%)	9.9	9.8	0.661
Hispanic (%)	5.9	6.0	0.451
Education (%)			0.595
less than high school	15.6	16.0	
high school	42.4	41.9	
some college	23.9	23.9	
college and above	18.1	18.2	
Retired (%)	44.1	44.5	0.662
Family			
At least one child	93.8	93.7	0.843
At least one daughter	78.4	78.2	0.605
Married or partnered	72.4	72.0	0.409
Health insurance			
Medicare (%)	56.8	57.4	0.212
Health			
Number of diagnosed disorders	1.8 (1.3)	1.8 (1.3)	0.177
Self-related health (%)			0.686
Excellent	11.4	11.2	
Very good	33.6	33.4	
Good	33.8	33.7	
Fair	16.2	16.5	
Poor	5.0	5.2	
At least one ADL (%)	11.6	11.8	0.465
At least one IADL (%)	9.8	9.9	0.579
Wealth			
Income quartiles (%)			0.750
Bottom 25%	12.1	12.4	
25%-50%	28.5	28.5	
50%-75%	37.9	37.6	
Top 25%	21.4	21.6	
Financial assets quartiles (%)			0.679
Bottom 25%	7.0	7.2	
25%-50%	25.8	25.8	
50%-75%	34.3	34.0	
Top 25%	33.0	33.0	
Risk aversion			
Has life insurance (%)	70.0	69.2	0.039

Table 2. Estimates of Marginal Effects of LTCI on LTC Use

	Any Home Care	Nursing Home > =100 days
"Naive" estimation without IV		
Marginal effect	0.018***	0.001
SE	(0.004)	(0.001)
IV Models		
Marginal effect	0.165***	0.039
SE	(0.064)	(0.055)
1st stage F	123.8	123.8
Mean of dependent variable	0.119	0.008
N	52,876	52,876

*Bootstrapped standard errors in parentheses. * p<0.1; ** p<0.05; *** p<0.01*

- The PS matching procedure resulted in a sample with no significant observable differences on key attributes between individuals who do and do not itemize
- Naïve (no IV) model estimates are very different from IV model estimates, suggesting regressor endogeneity
- IV model estimates show that LTCI leads to a 16.5 percentage points increase in home care use (with a mean use rate of 11.9%), and a 3.9 percentage points increase in nursing home use (mean 0.8%)
- Our robustness checks support our main findings

METHODS

Data

- Health and Retirement Study (HRS)
- Nationally representative, longitudinal study of Americans over age 50 and their spouses
- Information on the health and economic circumstances

Sample

- HRS waves 3-11 (1996-2012)
- Exclusions:
- Age<50
- Veteran's Administration or Medicaid coverage
- Negative income or assets
- More than $1M assets
- Do not file tax at t-1 wave
- Sample restricted to PS matched pairs
- Final sample: 52,876 observations

Variables

Dependent variables

- Nursing home use>= 100 days (to exclude nursing home stays for post-acute purposes)
- Home care use (in-home medical care or in-home personal care)

Independent variable

- Private LTCI ownership

Instrumental variable

- Individuals' tax itemization status at t-1 wave

Control variables

- Demographic characteristics, health status, income and assets, family status, Medicare status, risk aversion

CONCLUSIONS AND IMPLICATIONS

- We find evidence of significant moral hazard in home care use and a potentially meaningful but noisy effect on nursing home use.
- Policymakers designing incentives to promote private LTCI should consider additional spending associated with moral hazard and potentially incorporate disincentives to socially inefficient spending by policyholders.
- Further disentangling the welfare effects of increased utilization of LTC services, and ways in which inefficient moral hazard could be reduced while maintaining access, are important areas for future research

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