Financial literacy and private long-term care insurance coverage

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Motivation

- Small size of the private long-term care insurance market
  - Long-term care expenditure is one of the largest risks facing the elderly (high costs, high variance in nursing home stay, high percentage of older people with some chronic disability)
  - Yet largely uninsured across countries
    - USA (7m) and France (3m) are the biggest markets

- Various explanations for this puzzle
  - Supply side: asymmetric information, transaction costs, imperfect competition, dynamic contracting problems
  - Demand side: state dependent utility, illiquid housing, informal care, crowding out by the public sector
  - Other demand factors?

Motivation

- Financial literacy: A combination of awareness, knowledge, skill, attitude necessary to make sound financial decisions and ultimately achieve individual financial wellbeing (OECD)

- Substantial literature over the last years has found a significant effect on household decisions
  - retirement planning (Lusardi et al. 2007, Lusardi 2008)
  - retirement saving (Banks et al. 2007),
  - wealth accumulation (Jappelli et al. 2013),
  - stock market participation (van Rooij et al. 2007)
  - portfolio diversification (Guiso and Jappelli 2008)

- Economic theory: a fully rational and well-informed individual will smooth consumption over the lifetime. Financial literacy is part of individuals' human capital and can help to gain access to higher-return assets. Human capital investment can be endogenous and individuals will optimally elect to invest in financial knowledge.

Aim

- Aim: Investigate the demand determinants of long-term care insurance purchase. How important is financial literacy?

Data

- SHARE (Survey of Health and Retirement in Europe)
  - Cross-country individual level dataset for 50+ Europeans
  - Rich in demographic, socioeconomic and health information

- Wave 1 (2004)
  - 11 European countries: Austria, Belgium, Denmark, France, Germany, Greece, Italy, Netherlands, Spain, Sweden, Switzerland
  - Insurance: "Do you have any voluntary, supplementary or private health insurance […] in order to complement the coverage offered by the National Health System?
    - […]
    - Long-term care in a nursing home
    - Nursing care at home
    - Home help for activities of daily living

Data

- Wave 1 (2004)
  - Financial literacy: index of four financial and numerical questions
    - Compute a percentage
    - Compute the price of a good after a discount
    - Compute the price of a car that sells at two-thirds of its cost when new
    - Interest rate compounding in a savings account

  - Other controls:
    - Age, gender, marital status, education, health status, chronic diseases, income, bequest, number of children, drinking and smoking behavior, employment status, confronted with ltc risk (provided care)

Empirical model

- Linear probability model to estimate the probability of holding private insurance

$$ltci_i = a + b_1 Finlit_i + b_2 X_i + u_i$$

where the dependent variable is a dummy taking the value 1 if the respondent holds private insurance and b_1 is the coefficient of interest

Empirical issues

- Endogeneity
  - Omitted variables
    - ability
    - health
    - individual risk and time preferences
  - Measurement error
    - Financial literacy is noisy measure (around 10% noise) (Brehman et al. (2010) and Brehman et al. (2012))

- Strategy:
  - Control for as many of these factors as possible
  - Use IV model

Instruments

- Wave 3 (known as SHARELIFE) records individual life-histories for Wave 1 respondents, based on the so-called life-history calendar method of questioning, designed to help respondents recall past events more accurately.

- Some questions could be used as a measure of respondents' financial literacy endowment:
  - Mathematical ability at age 10 (much better, better, same, worse, much worse than average in class)
  - Number of books in household at age 10 (none/very few, one shelf, one bookcase, two bookcases, more than two bookcases)

- These variables could be thought to affect current financial literacy levels but not the insurance decision directly other than through their effect on current financial literacy

Sample

- Primary buying age 50-69
- Restrict to countries with non-negligible long-term care insurance
- N=6,152

Long-term care insurance in SHARE

Country	Percentage of sample with LTCI(%)
Austria	0.68
Germany	0
Sweden	0.12
Netherlands	0
Spain	2.7
Italy	0.25
France	51.35
Denmark	0.86
Greece	0.33
Switzerland	10.65
Belgium	6.13
Total	7.32

Financial literacy in SHARE

Financial literacy index score				
1	2	3	4	5
9.62%	17.49%	31.18%	30.29%	11.42%

Percentage of LTCI holders within each literacy segment				
1	2	3	4	5
14.48%	16.49%	17.19%	21.48%	22.53%

Results

First stage regression

	Dependent variable: Financial literacy
Math	**0.212***
Books	**0.0730***
Age	0.0116
Age squared	-0.000189
Female	-0.359***
Living with spouse	0.0529
Secondary education	0.335***
University education	0.511***
Chronic conditions	-0.0352***
Number of children	-0.0163*
Low income quartile	-0.151**
Medium income quartile	-0.0998
N	5,071
R2	0.319

Regression also includes: country dummies, dummies for level of potential bequest (low, medium), indicator for whether respondent drinks more than 2 glasses every day, dummy for having provided help, dummy for having life insurance

Results

	OLS	IV
Financial literacy	**0.0137***	**0.0501**
Age	0.00770	0.00545
Age squared	0.0006	0.0004
Female	-0.00078	0.0121
Living with spouse	0.0199*	0.0148
Secondary education	0.0384***	0.0189*
University education	0.00994	-0.0175
Chronic conditions	0.0721**	0.0223*
Number of children	-0.00194	0.0260
Low income	0.00634	0.0144
Medium income	0.0113	0.0151
Under-id (chi-sqrd 3)		232.124***
Weak inst (F-test)		131.20***
Over-id (chi-sqrd 2)		0.045
Endog (chi-sqrd 1)		7.51992***
N	5,071	5,071

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Sensitivity

- Results robust to:
  - Specification
    - Probit model
  - Sample
    - Only French sample (IV estimate is larger and also evidence of income effect)
  - Health variables
    - Self-reported health
    - ADL, IADL
  - Changes in instruments – using only one instrument

Discussion

- Significant effect of financial literacy
- A one-standard deviation increase in literacy raises insurance holding by 5 percentage points
- One of the significant determinants of private long-term care insurance
- Country of residence also very important
  - Significantly more likely to hold insurance if in France
  - The effect is larger in the French sample
- The results highlight the importance of financial abilities not only in old age but also in early life