



International Association for the
Study of Insurance Economics

Études et Dossiers

Extract from

Études et Dossiers No. 348

**5th Geneva Association Health & Ageing
Conference**

**Long Term Care –
Risk Profiles, Determinants and Financing**

6-7 November 2008
London

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November 2008

Working Paper Series of The Geneva Association

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Are They Aware? Do They Care? - Analyzing Adult Children's Demand for Insuring Their Parents' Long Term Care Risk

Tian Zhou-Richter



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Adult Children's Demand for LTC Insurance

Outline


1. Motivation
2. Research Objectives
3. Theoretical Background
4. Data
5. Main Results
6. Conclusions
7. Implications

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Adult Children's Demand for LTC Insurance

1. Motivation: Financial Need

- People needing long-term care (LTC):
 - Germany: More than 11% of people aged 65 and older
 - US: More than 40% of elderly will need LTC in their lives
- Average monthly cost of staying in a nursing home:
 - €2710 in Germany
 - \$5800 in the US
- Average length of a nursing home stay
 - 5 years in Germany
 - 2.4 years in the US

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Adult Children's Demand for LTC Insurance

1. Motivation: Cost Coverage In Germany

- 40% by compulsory long-term care insurance
- 60% by
 - Complementary long-term care insurance
But: only 1.2% of the population insured
 - Out-of-pocket
But: more than half of the elderly cannot pay off the average remaining cost of a nursing home stay
- Social welfare system - the last resort
- No coverage through the public health insurance

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Adult Children's Demand for LTC Insurance

1. Motivation: Cost Coverage In the US

- No LTC insurance coverage for the majority of US citizens
- Medicaid
 - Primary source of public funding for LTC
 - A means-tested social assistance program for the poor
- Medicare
 - A federal health care program, designed to cover medical expenses for some groups of population
 - Pays a portion of the LTC cost subject to some conditions
- Private LTC insurance: Only 3% of the adult population

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Adult Children's Demand for LTC Insurance

1. Motivation: Impact on Children

- Obligations for children whose parents need long-term nursing care and have exhausted their own financial resources
 - Strongly perceived moral obligation
 - Legal obligation in some countries, including Germany

→ Problems for middle-aged people:

- Providing nursing care at home → physical and psychological stress
- Paying for nursing home cost → financial burden

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Adult Children's Demand for LTC Insurance

2. Research Objective (1)

- Our general research objective:

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    graph TD
      A[Examination of] --> B[the children's awareness of the financial risk]
      A --> C[changes in children's insurance purchase intentions]
      B --- D[with respect to parents' potential future nursing care needs]
      C --- D
      D --> E[Implications]
    
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Adult Children's Demand for LTC Insurance

2. Research Objectives (2)

- Three-step approach
 - Step 1: Examination of children's:
 - estimates of parents' LTC risk (about the LTC frequency, cost, duration etc.)
 - existing willingness-to-buy
 - Step 2: Information update
 - Step 3: Question whether the provided information changes their purchase intention
- Change rate → Children's awareness of the risk
- Significant influence variables → Explanation for the low demand and identification of potential insurance purchasers

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Adult Children's Demand for LTC Insurance


2. Research Objectives (3)

- Why comparison between Germany and the US?
 - Same concern about financial sustainability of public LTC financing programs due to demographic changes
 - Different regulation levels

	Germany	US
Public LTC insurance	yes	no
Legal responsibility of adult children to assist ailing parents	yes	no

- Different demand in the two countries?
- More or less regulations to enhance the demand?

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Adult Children's Demand for LTC Insurance

3. Theoretical Background: Literature Overview

- Risk underestimation as reasons for insufficient demand for LTC insurance
 - Lack of information about government supported insurance coverage [Pauly (1990), AARP (2006)]
 - Underestimation of the probability of becoming a nursing care case [Pauly (1990), Bacon et al. (1989)]
- Risk aversion as an important influence factor for the demand of LTC insurance [Finkelstein and McGarry (2006), Schulze (2007)]

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Adult Children's Demand for LTC Insurance

3. Theoretical Background: Hypothesis 1

- H1: Other things being equal, the more adult children have underestimated the financial risk caused by their parents' LTC needs, the more likely they will become willing to purchase LTC insurance for their parents after being better informed.
- **Testing the influence of risk underestimation for the German Survey:**

$$\begin{aligned}
 g_i^G = & \beta_0 + \beta_1 \cdot \underset{(-)}{Probability}_i + \beta_2 \cdot \underset{(-)}{D(Cost}_i)} + \beta_3 \cdot \underset{(-)}{D(Hours}_i)} \\
 & + \beta_4 \cdot \underset{(-)}{D(Duration}_i)} + \beta_5 \cdot \underset{(+)}{D(Public}_i)} + \beta_6 \cdot \underset{(+)}{Liable}_i \cdot \underset{(+)}{Nolegal}_i \\
 & + \beta_7 \cdot \underset{(+)}{Health}_i + \beta_8 \cdot \underset{(+)}{Liable}_i \cdot \underset{(+)}{Social}_i + \gamma' Y_i
 \end{aligned}$$

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Adult Children's Demand for LTC Insurance

3. Theoretical Background: Hypothesis 1

- **Testing the influence of risk underestimation for the US Survey:**

$$\begin{aligned}
 g_i^{US} = & \beta_0 + \beta_1 \cdot \underset{(-)}{Probability}_i + \beta_2 \cdot \underset{(-)}{D(Cost}_i)} + \beta_3 \cdot \underset{(-)}{D(Hours}_i)} \\
 & + \beta_4 \cdot \underset{(-)}{D(Duration}_i)} + \beta_5 \cdot \underset{(-)}{Medicaid(1)}_i + \beta_6 \cdot \underset{(+)}{Medicaid(2)}_i \\
 & + \beta_6 \cdot \underset{(+)}{Medicaid(3)}_i + \gamma' Y_i
 \end{aligned}$$

With $g(x_1, \dots, x_p) = \log \left(\frac{\Pr(LTC = 1 | X = x)}{1 - \Pr(LTC = 1 | X = x)} \right)$

$$LTC_i^{G,US} = \begin{cases} 1, & \text{if individual } i \text{ became willing to} \\ & \text{purchase private LTC insurance;} \\ 0, & \text{otherwise.} \end{cases}$$

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Adult Children's Demand for LTC Insurance

3. Theoretical Background: Hypothesis 2

- H2: Other things being equal, the more risk averse the adult children are, the more likely they will become willing to purchase private LTC insurance for their parents after being better informed.
 - **Testing the influence of the risk aversion for the German Survey:**

$$\begin{aligned}
 g_i^G = & \beta_0 + \beta_1 \cdot \underset{(-)}{\text{Probability}_i} + \beta_2 \cdot \underset{(-)}{D(\text{Cost}_i)} + \beta_3 \cdot \underset{(-)}{D(\text{Hours}_i)} \\
 & + \beta_4 \cdot \underset{(-)}{D(\text{Duration}_i)} + \beta_5 \cdot \underset{(+)}{D(\text{Public}_i)} + \beta_6 \cdot \underset{(+)}{\text{Liable}_i} \cdot \text{Nolegal}_i \\
 & + \beta_7 \cdot \underset{(+)}{\text{Health}_i} + \beta_8 \cdot \underset{(+)}{\text{Liable}_i} \cdot \text{Social}_i + \beta_9 \cdot \underset{(+)}{\text{(Risk aversion)}_i} + \gamma' Y_i
 \end{aligned}$$

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3. Theoretical Background: Hypothesis 2

- **Testing the influence of the risk aversion for the US Survey:**

$$\begin{aligned}
 g_i^{US} = & \beta_0 + \beta_1 \cdot \underset{(-)}{\text{Probability}_i} + \beta_2 \cdot \underset{(-)}{D(\text{Cost}_i)} + \beta_3 \cdot \underset{(-)}{D(\text{Hours}_i)} \\
 & + \beta_4 \cdot \underset{(-)}{D(\text{Duration}_i)} + \beta_5 \cdot \underset{(-)}{\text{Medicaid}(1)_i} + \beta_6 \cdot \underset{(+)}{\text{Medicaid}(2)_i} \\
 & + \beta_7 \cdot \underset{(+)}{\text{Medicaid}(3)_i} + \beta_7 \cdot \underset{(+)}{\text{(Risk aversion)}_i} + \gamma' Y_i
 \end{aligned}$$

- **Methodology:** Binary logistic regression

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3. Theoretical Background: Control Variables

- Control variables
 - Demographic characteristics
 - Age, income, number of siblings, number of children, gender, marital status, education
 - Prior experience with adverse health development
 - Presence of care, hospitalization, medication, visit to doctor
 - Attitudes towards LTC
 - Ownership of private LTC insurance, home care willingness, moral responsibility

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4. Data: German Data

- Comparison of the true value with respondents' answers about the LTC risk (793 respondents)

Variable	True value	Mean of answers
Average monthly cost of staying in a nursing home in €	2700	1944.53
Average hours per day needed to provide home care	7.14	8.00
Years an average care-needing person requires care for	5	8.24
% of total LTC cost covered by the public LTC insurance	40%	45%

- 29.38% of initial non-buyers became willing to buy after information update

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4. Data: The US Data

- Comparison of the true value with respondents' answers about the LTC risk (228 respondents)

Variable	True value	Mean of answers
Average monthly cost of staying in a nursing home in \$	5800.00	3566.23
Average hours per day needed to provide home care	2.86	10.35
Years an average care-needing person requires care for	2.00	6.52

- 26.30% of initial non-buyers became willing to buy after information update

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Adult Children's Demand for LTC Insurance


5. Main Results: H1 For The German Data (1)

- Regression results for testing the influence of the risk underestimation on the change in purchase intentions

Variable	β	Sig.	S.E.	Exp(β)	95% C.I. for EXP(β)	
					Lower	Upper
Probability	0.06		0.05	1.06	0.96	1.18
D(Cost)	-0.0002	***	0.0001	0.9998	0.9996	0.9999
D(Hours)	0.02		0.02	1.02	0.99	1.05
D(Duration)	-0.01		0.02	0.99	0.96	1.03
D(Public)	0.01	*	0.00	1.01	1.00	1.02
Liabe-Nolegal	-0.09		0.52	0.91	0.33	2.55
Health	0.56		0.38	1.75	0.82	3.70
Liabe-Social	0.72		0.62	2.06	0.61	6.98
Age						
[0,20)	1.39	***	0.53	4.00	1.40	11.41
[20, 30)	0.85	**	0.40	2.33	1.06	5.12
[30, 40)	0.68	*	0.40	1.98	0.91	4.31
Income						
[20K, 30K)	-0.85	**	0.43	0.43	0.18	1.00
Moral responsibility	0.83	**	0.41	2.30	1.02	5.17
Constant	-3.00	***	0.70	0.05		

Note R²= .058(Cox & Snell), .082(Nagelkerke). Model χ²(27) =46.975.
* p<0.1. ** p<0.05. *** p<0.01.

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Adult Children's Demand for LTC Insurance

5. Main Results: H1 For The German Data (1)

- Significant types of risk underestimation responsible for the change in purchase intentions
 - Underestimation of the average monthly cost of staying in a nursing home
 - Negative impact of D (Cost)
 - $D(\text{Cost}) = \text{estimated Cost} - \text{€}2700$
 - Overestimation of LTC cost covered by the public LTC insurance
 - Positive impact of D (Public)
 - $D(\text{Public}) = \text{estimated Public} - 40\%$

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5. Main Results: H1 For The US Data (1)

- Regression results for testing the influence of the risk underestimation on the change in purchase intentions

Variable	β	Sig.	S.E.	Exp(β)	95% C.I. for EXP(β)	
					Lower	Upper
Probability	0.34	**	0.17	1.41	1.01	1.97
D(Cost)	-0.00004		0.00010	0.99996	0.99977	1.00015
D(Hours)	-0.01		0.03	0.99	0.93	1.06
D(Duration)	-0.15	***	0.05	0.86	0.78	0.95
Medicaid						
Dummy 1	-0.79		0.50	0.45	0.17	1.20
Dummy 2	-2.27	***	0.91	0.10	0.02	0.61
Dummy 3	-0.77		0.59	0.46	0.15	1.46
Age						
[0, 30)	1.73	**	0.78	5.65	1.22	26.24
[40, 50)	-1.71	***	0.60	0.18	0.06	0.58
Children	0.29	*	0.17	1.33	0.96	1.86
Hospitalization	1.92	***	0.66	6.80	1.86	24.85
Ownership of LTCI	1.46	**	0.61	4.32	1.31	14.30
Constant	-3.95	***	1.44	0.02		

Note $R^2 = .254$ (Cox & Snell), .385(Nagelkerke). Model $\chi^2(25) = 63.922$.
* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$.

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5. Main Results: H1 For The US Data (2)

- Significant types of risk underestimation responsible for the change in purchase intention
 - Underestimation of years an average care-needing person requires care for
 - Negative impact of D (Duration)
 - $D(\text{Duration}) = \text{estimated Duration} - 2 \text{ years}$
 - No proof for underestimation of probability of parents' LTC needs
 - Positive impact of "Probability"
 - Indication for the existence of respondents' private information about parents' risk types?

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5. Main Results: H2

- Regression results for testing the influence of the risk aversion on the change in purchase intentions
 - Positive impact of the risk aversion highly significant in both surveys
 - Germany: $\beta = 0.37$ at a 1%-significance level
 - US: $\beta = 1.04$ at 1%-significance level
 - Explanatory power of both regression models almost doubled
 - Germany: Negelkerke $R^2 = 0.172$ (before: 0.082)
 - US: Negelkerke $R^2 = 0.502$ (before: 0.385)

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6. Conclusions

- Adult children generally not aware of the financial risk caused by their parents' future LTC needs
- Different types of risk underestimation responsible for change in purchase intentions between Germany and the US
- Limited explanatory power of risk underestimation for the change in purchase intentions
- Individual's risk preference highly influential in regard to the change in purchase intentions

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7. Implications

- For adult children:
Need for a greater understanding of the parents' LTC risk
- For policymakers:
With respect to lessen the pressure on public LTC financing programs in Germany and in the US
 - Larger portion of private LTC financing possible
 - Education about the LTC risk needed to enhance the adult children's awareness
 - No need for the US to raise regulation levels
- For the insurance industry:
Considerable market potential for private LTC insurance with desirable insurance purchasers

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