

Long-Term Care Insurance: Knowledge Barriers, Risk Perception and Adverse Selection

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Motivation

- ▶ Rapid population aging represents a challenge for financing and providing long-term care (LTC).
- ▶ *Brown and Finkelstein, 2009*: Near retirement, probability of ever needing LTC in nursing home in range [35%,50%] (U.S.)
- ▶ The annual cost of a private nursing home ranges between 40,000\$ and 60,000\$ in Canada.
- ▶ Despite public intervention (through tax credits and income-related allowance), still important out-of-pocket expenditures.
- ▶ ... yet, few people hold a private LTC insurance ("*LTCI Puzzle*"):
 - In the US, only 10.8% of those 60 years and older hold a private insurance policy
 - LTC spending covered by private insurance is less than 2% in 2010 (OECD, 2011)

Why so low take-up?

Demand Side:

- ▶ Importance of family support (Van Houtven and Norton, 2004; Bonsang, 2009),
- ▶ Crowdout from social insurance (Pauly, 1990; Brown and Finkelstein, 2008),
 - ▶ Public Homes: Substantial copays required (roughly 2000\$ per month), does not eliminate risk
 - ▶ Formal care (at home) can be expensive but subsidized through tax credits (up to 34% in Quebec)
- ▶ Misperceptions (Zhou-Richter et al., 2010; Finkelstein and McGarry, 2006),
- ▶ Bequest motives (Lockwood, 2014),
- ▶ Housing as substitute for insurance (Davidoff, 2010)
- ▶ Lack of financial knowledge (Lusardi and Mitchell, 2014, Lusardi et al. 2017) and of true LTC costs as well as institutional settings in case of dependency

Why so low take-up? (2)

Supply Side:

- ▶ Loading factors (Brown and Finkelstein, 2009),
- ▶ Adverse selection and moral hazard (Sloan and Norton, 1997),
- ▶ Rationing of access

⇒ **Using survey questions from a panel of 2000 Canadians, we study whether low take up for LTCI in Canada is a problem of supply, demand or both.**

Literature

- ▶ See literature mentioned above about the LTCI puzzle.
- ▶ Our stated-preference experiment is adapted from the methodology of *Einav et al. (2010)*.
- ▶ Provide estimates of demand for LTCI elasticity.
Previous studies (*Courtemanche and He, 2009; Goda , 2011*) find high price elasticity of LTCI demand: lower than -3 .
Ameriks, 2015: elasticity below unity.

The survey (1)

- ▶ We partnered with *Asking Canadians*, an online panel, to ask 2000 Canadians, aged between 50 to 70 years old, from Quebec and Ontario.
- ▶ **4 parts in the questionnaire:**
 - ▶ questions about socio-demographic characteristics (age, gender, province, educational attainment, marital status, kids, savings, income, retirement status),
 - ▶ questions about health status (heart disease, stroke, lung disease, diabetes, cancer, mental illness, hypertension, smoking now and ever).
 - ▶ reasons for (not) having purchased LTCI
 - ▶ questions about knowledge of LTC institutions, risk perceptions and preferences regarding the type of LTC they would receive.
 - ▶ stated-preference experiment

The survey (2)

Introductory text:

*We are going to show you some simple insurance policies and ask you to rate those. You can assume that if you were to have two or more limitations in activities of daily living, the insurance company offering you this product would pay the benefits **no matter what the circumstances**. Once you receive benefits, you do not pay any premiums.*

*Each product has three attributes: a) a monthly premium you have to pay; b) a monthly benefit if you have 2 or more limitations in activities of daily living, starting 3 months after your limitations have been verified; and c) a payout to your survivors if you die before age 85. Assume that if you are healthy and **you stop paying premiums for 3 consecutive months, the contract is cancelled and you lose coverage**. The premium cannot increase once you have purchased the product. Finally, the benefits are **adjusted for inflation (indexed)**.*

The survey (3)

While healthy	Once you have at least 2 ADL	When you die
You pay π	You receive b_{ltc}	Your survivors receive b_{life}

What are the chances, 0% meaning no chance and 100% for sure, that you would purchase the policy if it were offered to you by a **trusted** insurance company?

The survey (4)

- ▶ 5 scenarios (π, b_{LTC}, b_{life}) are presented to each respondent.
- ▶ **Benefits** are drawn independently as follow:
 - ▶ Monthly LTCI benefit b_{ltc} from the distribution $[2000, 1/3; 3000, 1/3; 4000, 1/3]$.
 - ▶ Life insurance benefit b_{life} from the distribution $[0, 3/5; 10000, 1/5, 25000, 1/5]$
- ▶ **Premiums** are age-gender actuarial premium π_h + a price adjustment factor τ which is randomized

$$\tau = [0.6, 1/5; 0.8, 1/5; 1.0, 1/5; 1.2, 1/5; 1.4, 1/5].$$

→ The premium is given by $\pi = \tau\pi_h$.

COMPAS

We match agents from our panel in COMPAS, a health microsimulation model which can predict lifetime exposure to mortality, disability, nursing home and formal care in Canada.

Individuals have the following characteristics:

- ▶ Socio-demographic characteristics: age, sex, immigration status, education level, income bracket
- ▶ Diseases: diabetes, high blood pressure, heart diseases, stroke, cancer, lung diseases, dementia
- ▶ Risk factors: smoking, obesity
- ▶ Disability: limitations in ADLs and Instrumental ADLs (IADL)
- ▶ Long-term care: formal home care, nursing home

Descriptive evidence (1)

Take-up, knowledge and awareness of LTCI

No LTCI		LTCI	
Fraction (%)	88.2	Fraction (%)	11.8
Knowledge of LTCI (%)		Knowledge of LTCI (%)	
<i>A lot</i>	7.2	<i>A lot</i>	29.3
<i>A little</i>	52.9	<i>A little</i>	65
<i>None at all</i>	39.9	<i>None at all</i>	5.7
Why don't you have LTCI? (%)		How did you come to purchase LTCI? (%)	
<i>Never offered one</i>	43.6	<i>Offered</i>	53
<i>Not yet made decision</i>	7.7	<i>Searched myself</i>	9.6
<i>Used to have one</i>	0.6	<i>Other</i>	37.4
<i>Too expensive</i>	19.3		
<i>Doesn't cover my needs</i>	2.2	LTC policy	
<i>Don't need such a policy</i>	14.4	<i>Premium</i>	\$ 125
<i>Don't know what it is</i>	8.2	<i>Benefit</i>	\$ 2,415
<i>Other</i>	4.1		
Do you have life insurance? (%)		Do you have life insurance? (%)	
<i>Yes</i>	67.4	<i>Yes</i>	75
<i>No</i>	31.8	<i>No</i>	22.2
<i>Don't know</i>	0.77	<i>Don't know</i>	2.8

Table: Holding of Long-Term Care and Life Insurance

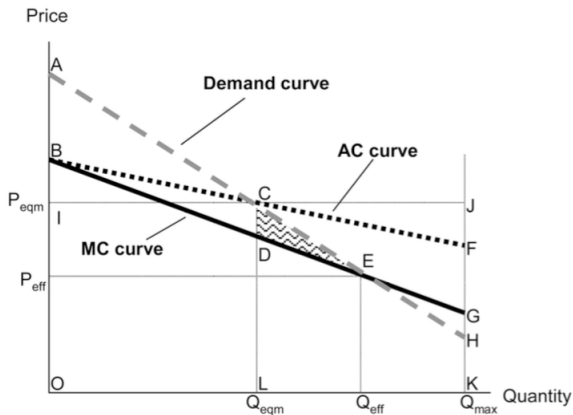
Descriptive evidence (2)

Stated-preference choice probabilities (from survey)

- ▶ 23% declare they have a zero-probability to buy all 5 LTCI contracts proposed to them.
- ▶ Choice probabilities increase with life insurance and decrease with LTC benefits.
→ Highest choice probability for the contract with higher LI benefit (25000\$) and lower LTC benefit (2000\$).

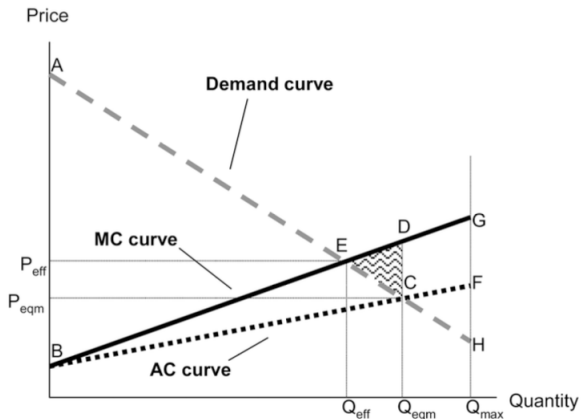
Model (1)

We follow the methodology of *Einav et al. (2010)*.



→ **Under-insurance** (Adverse selection case)

Model (2)



→ **Over-insurance** (Propitious selection case)

Results (1)

Demand Elasticities

contract	estimate	std error
(2,0)	-.686	.0839
(2,10)	-.677	.120
(2,25)	-.481	.128
(3,0)	-.768	.092
(3,10)	-.788	.139
(3,25)	-.702	.134
(4,0)	-1.165	.100
(4,10)	-.808	.142
(4,25)	-1.053	.149

Table: Demand Elasticities by contract (in thousand \$).

→ *Elasticities are mostly below 1 and much lower than what was previously found in the literature.*

Results (2): Benchmark Case - No Life Insurance

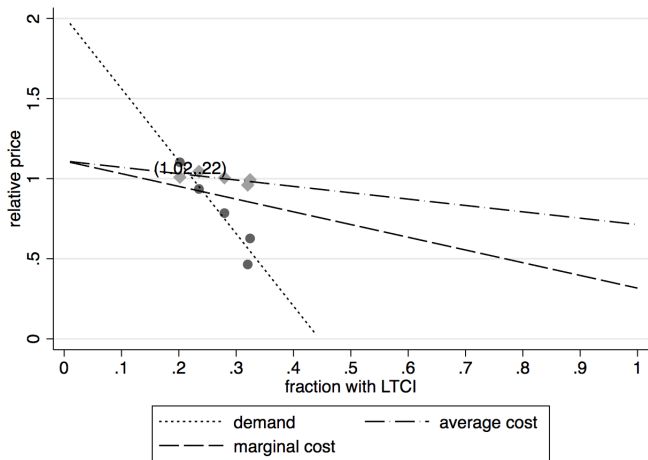


Figure: Predicted Equilibrium for contract ($b_{ltc} = 2000$, $b_{li} = 0$)

Results (3): Varying L I benefit

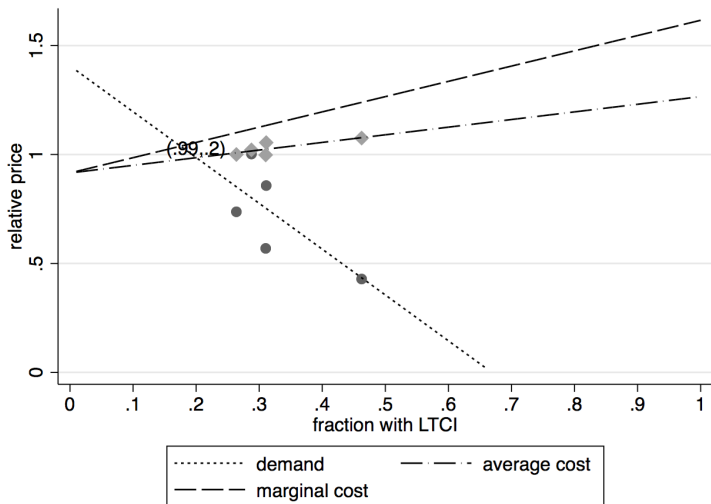


Figure: Predicted Equilibrium for Contract ($b_{l_{tc}} = 2000$, $b_{l_i} = 25000$)

Results (4): Awareness Constraint

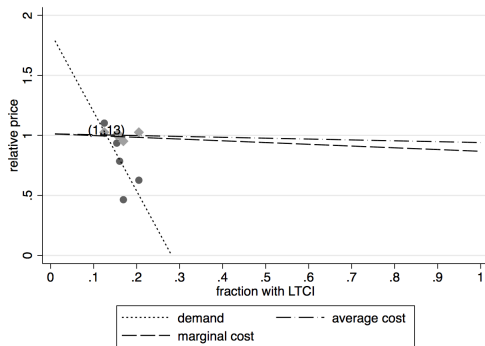


Figure: Predicted Equilibrium for contract ($b_{LTC} = 2,000\$, b_{li} = 0$) with Awareness Constraint

⇒ **only 13% would buy LTCI**, closer to the actual fraction of respondents who declared they had a LTCI policy (11.8%)

Demand Factors

- ▶ We regress

$$\bar{q}_i = x_i \beta + \epsilon_i \quad (1)$$

where \bar{q}_i is the average of the choice probability over the 5 scenarios of respondent i , x_i denotes a set of variables measured in the survey, ϵ_i is an error term.

→ *all results about this regression in the paper!* regression

- ▶ We then construct counterfactual choice probabilities k using:

$$\tilde{q}_{i,j}^k = q_{i,j} + (x_i^k - x_i) \hat{\beta} \quad (2)$$

where x_i^k is a counterfactual set of values for x_i , and where $\hat{\beta}$ is the estimated value of β .

- ▶ We can then recompute equilibrium in the market using $\tilde{q}_{i,j}^k$ and compare it to equilibrium using $q_{i,j}$.

Demand Factors (2) - Counterfactual analysis

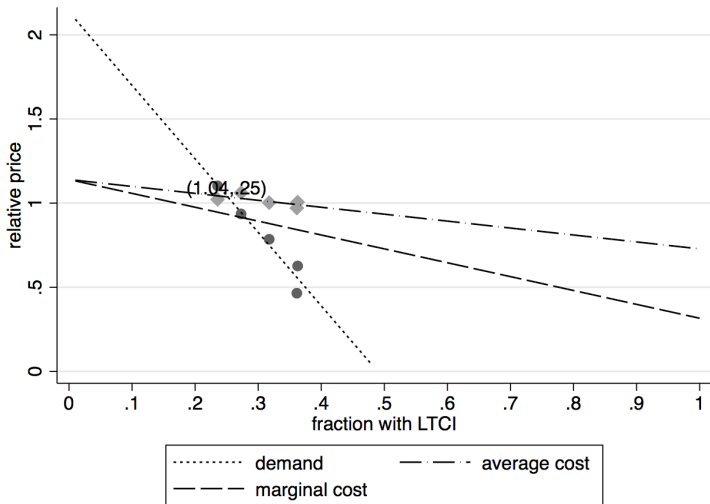


Figure: Predicted Equilibrium for Contract with 2,000\$ Monthly LTC benefit without Misperception and Knowledge Barriers

Evaluation of welfare costs

- ▶ *Welfare costs associated with selection are small: 0.16\$ a month, 1.92\$ a year, for contract ($b_{LTC} = 2000$, $b_{LI} = 0$)*
→ similar to the findings of Einav et al. (2010)
- ▶ *Welfare costs associated with awareness constraint range from 0.3\$ to 11\$ a month depending on the contract considered.*
- ▶ *Welfare gains from correcting for misperceptions regarding survival and dependency probabilities as well as the lack of knowledge regarding LTCI and LTCI institutions range between 3.7\$ and 9.5\$ a month depending on the contract considered.*

Conclusions (1)

- ▶ New evidence on the determinants of low take-up rates of LTCI for Canada.
- ▶ *Results:*
 - ▶ In the baseline scenario, we predict 22% take-up if everyone offered.
 - ▶ *Awareness of these products is key:* more than 40% have never been offered such insurance (and have limited knowledge). Constructing a counterfactual where we set demand to 0 for those who were never offered such product, the take-up rate is 13% close to the actual take-up rate of our study.
 - ▶ Adverse selection does not appear to explain low take-up, in part because of inelastic demand.
 - ▶ Limited scope for take-up rates beyond 25%.
- ▶ *Other possible explanations?*
 - ▶ Public provision
 - ▶ Substantial income replacement rates for older Canadians

	(1)	(2)	(3)
	q	q	q
own home	-0.0411** (-2.68)	-0.0400** (-2.63)	-0.0383* (-2.56)
bequest	0.0474*** (3.46)	0.0442** (3.28)	0.0403** (2.98)
risk loving	0.0332* (2.28)	0.0299* (2.08)	0.0283* (1.98)
family	0.0293* (2.34)	0.0208 (1.78)	0.0212 (1.81)
prefers formal	0.0395*** (3.53)	0.0315** (2.75)	0.0264* (2.29)
bias survival		0.0461* (2.16)	0.0480* (2.27)
dnk survival		-0.0160 (-0.91)	-0.0164 (-0.93)
bias adl		0.0570* (2.36)	0.0530* (2.21)
dnk adl		-0.0321* (-2.09)	-0.0306* (-2.02)
pr family provides care		0.0526** (2.81)	0.0466* (2.48)
dnk family		0.00333 (0.18)	0.000438 (0.02)
bias nursing home		0.0865*** (3.46)	0.0918*** (3.69)
dnk nursing home		0.00199 (0.12)	0.00568 (0.36)
financial knowledge			-0.0290* (-2.54)
knows means-testing			0.0142 (0.94)
monthly cost nursing home			-0.00344 (-0.81)
dnk cost			-0.00785 (-0.44)
nursing home free			-0.00184 (-0.09)
wait time			0.00178* (2.08)
dnk wait time			0.0140 (0.87)
dnk LTCI			-0.0537*** (-4.63)
knows lapsing risk			0.0305 (1.08)
R^2	0.066	0.098	0.114

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$