

RIETI-JER Workshop

# Economics of Aging in Japan and other Societies

## Presentation



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## December 13, 2014

Research Institute of Economy, Trade and Industry (RIETI)  
<http://www.rieti.go.jp/en/index.html>

# JSTAR Workshop

## Japanese long-term care insurance: equal services for equal needs?

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# Motivation

- **Objective** : analyze the determining factors of the non-use of LTCI services, with particular attention to the role played by children and the level of income.
- Motivation
  - Mandatory Long-Term Care Insurance since April 2000
  - One of the purposes : lessen the burden of care on family caregivers
    - Encourage participation on the labor market
    - Increase the quality of elderly care
    - Avoid family caregivers' burn out
- Is the access to LTCI services guaranteed to all ?
  - the presence of children
  - the characteristics of children
  - the financial situation

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# Long Term Care Insurance in Japan

- Before the launch of Long Term Care Insurance

social welfare policy program provided by municipalities :

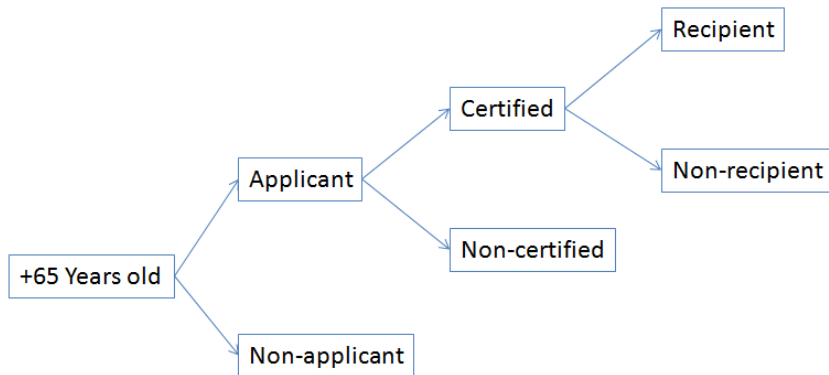
- restricted to lower income household
  - not necessarily available for those who could be cared by family members
  - inequalities between different localities
- 
- Target with Long Term Care Insurance (LTCI)

**“Equal services for equal needs”**

# Long Term Care Insurance in Japan

- Since April 2000
  - Insurance premium : every individual aged 40 years and more
  - Beneficiaries : elderly aged 65 and more who are certified as needing care
    - Exception : 40 years old and more for specific disease (ex. Parkinson)
  - Co-paiement : 10 % regardless the level of income
  - Additional system to reduce or limit the amount of co-paiement

# Long Term Care Insurance in Japan



# Long Term Care Insurance in Japan

- Few figures (2010)
  - Proportion of + 65 years old : 23% of the population
  - Proportion of certified : 16,6% of the elderly aged 65 and more
  - Recipients : 80% of the certified ; 13,4% of the elderly aged 65 and more
    - **15 to 25% of the certified do not receive any service**
- “What are the main factors that determine whether a frail elderly decide to apply for certification or not ?”
  - the role played by adult children (living place, gender, marital status and level of education)
  - the impact of having very low income



# Literature - the use of formal care

- Impact of informal care on the use of formal care
  - Van Houtven and Norton (2004), Charles and Sevak (2005), Bolin et al. (2007), Bonsang (2009)
  - *Informal care is a substitute of formal care, except for heavy disability*
  - **Instruments** : number of children, characteristics of children, distance from the closest child, proportion of girls among the children
- Impact of the number of children on the use of formal care in Japan
  - Hanaoka and Norton (2008)
  - *The presence of children with low opportunity cost has a stronger substitution effect*

# Conceptual Framework

- Utility maximizing decision
  - expected benefits from the program
  - costs involved in the process of applying

$$U = U(Y + \gamma \cdot P \cdot B) - \phi \cdot P$$

$P = 1$  if the individual applies and benefits from the program

$B$  : individual potential benefits from the program

$\phi$  : potential cost induced by the application ( $\phi < 0$ )

$\gamma$  : stigma component ( $0 < \gamma < 1$ )

- Examples of costs (Remler et al., 2001 ; Currie, 2006) :
  - (perceived) process cost
  - stigma
  - ignorance or lack of information

# Expected results

- The role of adult children
  - Positive impact by informing
  - Negative effect by reducing the expected benefit
    - culturally stronger expectations of daughters and daughters-in-law
    - stronger negative effect for low opportunity cost
- Impact of income
  - Co-payment of 10%
  - The non-payment of insurance premiums
  - Mean-tested complementary programs

# Econometric specification

- Probit Model

$$App_i = \begin{cases} 1 & \text{if } App_i^* > 0 \\ 0 & \text{if } App_i^* \leq 0 \end{cases}$$

$$Pr(App_i^* > 0 | D_i, X_i, IC_i) = \Phi(\beta_0 + D_i\beta_d + X_i\beta_x + IC_i\beta_{ic})$$

- $App_i$  : 1 if applied, 0 otherwise
  - $D_i$  : level of disability
  - $IC_i$  : a vector of potential informal caregivers characteristics
  - $X_i$  : a vector of other parent's characteristics
- Variables of interest
    - Children's characteristics
    - Level of income (proxy of level of income)

# Econometric specification

- children's characteristics
  - Closest child
  - Presence of a child according to living place, gender and marital status
    - 2 regressions : respondents coliving with a child & respondents not coliving
    - 4 groups of child : unmarried daughter, married daughter, married son or daughter-in-law, and unmarried son
  - Presence of daughters or daughters-in-law according to living place and level of education

# Data : 3rd wave of JSTAR

- 3rd wave of Japanese Survey of Aging and Retirement (JSTAR)
  - Sample : respondents as elderly parents
    - 2 367 individuals aged between 65 and 79 years old
    - Among them 135 (6%) declares having applied for LTCI certification
    - 660 individuals who also declare at least 1 limitation
  - Variables of interest
    - Children's characteristics
    - Income variable : tax non-payment as a proxy of very low income
  - Variables of control
    - Respondant's level of disability
    - Gender
    - Age
    - Marital status

# Control variables

- Parent's level of disability
  - Number of physical limitations declared
    - among a list of 10 daily activities
  - Dummy indicating whether the respondent declares having in-house IADL
    - boiling water
    - making phone calls
    - taking medicine
  - Dummy indicating whether the respondent declares having out-door IADL
    - going out alone using public transportation (buses, trains)
    - shopping for daily necessities
  - Dummy indicating whether physical or mental condition has interfered with daily life

# Data summary

TABLE: Dependant and control variables

| Variable              | Mean  | (Std. Dev.) | Min. | Max. | N    |
|-----------------------|-------|-------------|------|------|------|
| Applied               | 0.059 | (0.235)     | 0    | 1    | 2569 |
| Female                | 0.517 | (0.5)       | 0    | 1    | 2576 |
| Age                   | 71.28 | (3.956)     | 65   | 80   | 2576 |
| Age 65-69             | 0.374 | (0.484)     | 0    | 1    | 2576 |
| Age 70-74             | 0.386 | (0.487)     | 0    | 1    | 2576 |
| Age 75 and more       | 0.24  | (0.427)     | 0    | 1    | 2576 |
| Junior High School    | 0.367 | (0.482)     | 0    | 1    | 2564 |
| High School           | 0.429 | (0.495)     | 0    | 1    | 2564 |
| Junior College        | 0.091 | (0.288)     | 0    | 1    | 2564 |
| University and more   | 0.113 | (0.317)     | 0    | 1    | 2564 |
| Married               | 0.771 | (0.42)      | 0    | 1    | 2530 |
| 1 limitation          | 0.089 | (0.284)     | 0    | 1    | 2576 |
| 2-3 limitations       | 0.079 | (0.269)     | 0    | 1    | 2576 |
| 4-6 limitations       | 0.052 | (0.223)     | 0    | 1    | 2576 |
| 7 or more limitations | 0.06  | (0.237)     | 0    | 1    | 2576 |
| Out-door IADL         | 0.076 | (0.266)     | 0    | 1    | 2576 |
| In-house IADL         | 0.031 | (0.174)     | 0    | 1    | 2576 |
| Interference          | 0.197 | (0.398)     | 0    | 1    | 2528 |



# Data summary

TABLE: Variables of interest

| Variable                        | Mean  | (Std. Dev.) | Min. | Max. | N    |
|---------------------------------|-------|-------------|------|------|------|
| Pay no tax                      | 0.087 | (0.281)     | 0    | 1    | 2576 |
| No child                        | 0.107 | (0.309)     | 0    | 1    | 2576 |
| Coliving                        | 0.367 | (0.482)     | 0    | 1    | 2576 |
| Closest in same town            | 0.267 | (0.443)     | 0    | 1    | 2576 |
| Far only                        | 0.259 | (0.438)     | 0    | 1    | 2576 |
| Coliving unmarried daughter     | 0.106 | (0.308)     | 0    | 1    | 2576 |
| Coliving married daughter       | 0.044 | (0.205)     | 0    | 1    | 2576 |
| Coliving daughter-in-law        | 0.109 | (0.312)     | 0    | 1    | 2576 |
| Coliving unmarried son          | 0.134 | (0.341)     | 0    | 1    | 2576 |
| Unmarried daughter living close | 0.036 | (0.188)     | 0    | 1    | 2576 |
| Married daughter living close   | 0.215 | (0.411)     | 0    | 1    | 2576 |
| Daughter-in-law living close    | 0.18  | (0.384)     | 0    | 1    | 2576 |
| Unmarried son living close      | 0.032 | (0.176)     | 0    | 1    | 2576 |

# Data summary

TABLE: Variables of interest

| Variable                     | Mean  | (Std. Dev.) | Min. | Max. | N    |
|------------------------------|-------|-------------|------|------|------|
| <b>Coliving</b>              |       |             |      |      |      |
| Unmarried Daughter Low Educ  | 0.04  | (0.197)     | 0    | 1    | 2576 |
| Unmarried Daughter High Educ | 0.067 | (0.25)      | 0    | 1    | 2576 |
| Married Daughter Low Educ    | 0.058 | (0.233)     | 0    | 1    | 2576 |
| Married Daughter High Educ   | 0.051 | (0.221)     | 0    | 1    | 2576 |
| <b>Living close</b>          |       |             |      |      |      |
| Daughter Low Educ            | 0.125 | (0.33)      | 0    | 1    | 2576 |
| Daughter High Educ           | 0.128 | (0.334)     | 0    | 1    | 2576 |

# Results

- 3 tables of results
  - Closest child
  - Children's gender, marital status and living place
  - Children's level of education

| variable                        | (1)              |           | (2)                   |           |
|---------------------------------|------------------|-----------|-----------------------|-----------|
|                                 | All              |           | At least 1 limitation |           |
|                                 | (n=2 367)        |           | (n=660)               |           |
|                                 | dy/dx            | Std. Err. | dy/dx                 | Std. Err. |
| <b>Female</b>                   | -0.004           | (0.006)   | 0.001                 | (0.026)   |
| <b>Age</b>                      |                  |           |                       |           |
| 65-70                           | ref.             | ref.      | ref.                  | ref.      |
| 70-74                           | 0.013            | (0.008)   | 0.034                 | (0.035)   |
| 75 and more                     | <b>0.025**</b>   | (0.012)   | 0.051                 | (0.040)   |
| <b>Level of education</b>       |                  |           |                       |           |
| Elementary/Middle School        | <b>-0.012**</b>  | (0.005)   | <b>-0.047*</b>        | (0.026)   |
| High School/Junior College      | ref.             | ref.      | ref.                  | ref.      |
| University or More              | -0.003           | (0.009)   | -0.028                | (0.040)   |
| <b>Marital status (married)</b> | -0.007           | (0.008)   | -0.025                | (0.031)   |
| <b>Pay No Tax</b>               | <b>-0.019***</b> | (0.005)   | <b>-0.075***</b>      | (0.024)   |
| <b>Limitations</b>              |                  |           |                       |           |
| 1 limitation or less            | ref.             | ref.      | ref.                  | ref.      |
| 2-3 limitations                 | 0.021            | (0.015)   | 0.008                 | (0.039)   |
| 4-6 limitations                 | <b>0.084***</b>  | (0.030)   | <b>0.114**</b>        | (0.055)   |
| 7 or more limitations           | <b>0.148***</b>  | (0.040)   | <b>0.200***</b>       | (0.062)   |
| <b>In home iadl</b>             | <b>0.098**</b>   | (0.043)   | <b>0.320***</b>       | (0.097)   |
| <b>Outside iadl</b>             | <b>0.086***</b>  | (0.026)   | <b>0.179***</b>       | (0.051)   |
| <b>Interfer</b>                 | <b>0.041***</b>  | (0.012)   | <b>0.108***</b>       | (0.029)   |
| <b>Closest child</b>            |                  |           |                       |           |
| coliving                        | 0.003            | (0.008)   | 0.008                 | (0.033)   |
| same town                       | ref.             | ref.      | ref.                  | ref.      |
| far                             | <b>0.023**</b>   | (0.011)   | 0.064                 | (0.042)   |
| no child                        | 0.015            | (0.016)   | 0.046                 | (0.062)   |
| <b>Wave dummies</b>             |                  | Yes       |                       | Yes       |
| pseudo R2                       |                  | 0.409     |                       | 0.389     |

| variable                               | (3)                 |           | (4)                     |           |
|--|---------------------|-----------|-------------------------|-----------|
|  | Coliving<br>(n=875) |           | Not Coliving<br>(n=868) |           |
|  | dy/dx               | Std. Err. | dy/dx                   | Std. Err. |
| <b>Age</b>                             |                     |           |                         |           |
| 65-70                                  | ref.                | ref.      | ref.                    | ref.      |
| 70-74                                  | 0.017               | (0.011)   | 0.010                   | (0.007)   |
| 75 and more                            | <b>0.043*</b>       | (0.024)   | 0.005                   | (0.009)   |
| <b>Level of education</b>              |                     |           |                         |           |
| Elementary/Middle School               | -0.005              | (0.005)   | 0.006                   | (0.006)   |
| High School/Junior College             | ref.                | ref.      | ref.                    | ref.      |
| University or More                     | -0.003              | (0.006)   | -0.001                  | (0.008)   |
| <b>Pay No Tax</b>                      | <b>-0.010**</b>     | (0.004)   | <b>-0.010**</b>         | (0.004)   |
| <b>Limitations</b>                     |                     |           |                         |           |
| 1 limitation or less                   | ref.                | ref.      | ref.                    | ref.      |
| 2-3 limitations                        | 0.010               | (0.012)   | 0.045                   | (0.030)   |
| 4-6 limitations                        | 0.032               | (0.030)   | <b>0.104*</b>           | (0.054)   |
| 7 or more limitations                  | 0.083               | (0.052)   | <b>0.220**</b>          | (0.088)   |
| <b>In home iadl</b>                    | 0.048               | (0.043)   | 0.051                   | (0.049)   |
| <b>Outside iadl</b>                    | <b>0.075*</b>       | (0.039)   | 0.024                   | (0.023)   |
| <b>Interfer</b>                        | <b>0.029*</b>       | (0.016)   | 0.009                   | (0.009)   |
| <b>Coliving with</b>                   |                     |           |                         |           |
| Unmarried Daughter only                | <b>-0.009**</b>     | (0.005)   |                         |           |
| married Daughter only                  | -0.006              | (0.004)   |                         |           |
| Daughter in Law only                   | <b>-0.014**</b>     | (0.006)   |                         |           |
| Unmarried Son                          | ref.                | ref.      |                         |           |
| Several coliving children              | <b>-0.007*</b>      | (0.004)   |                         |           |
| <b>At least 1 in the same town</b>     |                     |           |                         |           |
| Unmarried Daughter                     |                     |           | <b>-0.008**</b>         | (0.004)   |
| Married Daughter                       |                     |           | -0.008                  | (0.005)   |
| Daughter in Law only                   |                     |           | 0.003                   | (0.005)   |
| Unmarried Son                          |                     |           | 0.036                   | (0.026)   |
| <b>Number of children living close</b> | -0.006              | (0.004)   |                         |           |
| <b>Number of children living far</b>   | <b>-0.007*</b>      | (0.004)   | <b>-0.008*</b>          | (0.004)   |
| pseudo R2                              |                     | 0.531     |                         | 0.487     |

| variable                               | (5)              |             | (6)                              |             |
|--|------------------|-------------|----------------------------------|-------------|
|  | All<br>(n=1 743) |             | At least 1 limitation<br>(n=487) |             |
|  | dy/dx            | Std. Err.   | dy/dx                            | Std. Err.   |
| <b>Age</b>                             |                  |             |                                  |             |
| 65-70                                  | <i>ref.</i>      | <i>ref.</i> | <i>ref.</i>                      | <i>ref.</i> |
| 70-74                                  | <b>0.013*</b>    | (0.007)     | 0.028                            | (0.033)     |
| 75 and more                            | <b>0.022*</b>    | (0.012)     | 0.070                            | (0.043)     |
| <b>Level of education</b>              |                  |             |                                  |             |
| Elementary/Middle School               | -0.001           | (0.004)     | 0.006                            | (0.025)     |
| High School/Junior College             | <i>ref.</i>      | <i>ref.</i> | <i>ref.</i>                      | <i>ref.</i> |
| University or More                     | -0.001           | (0.007)     | -0.036                           | (0.029)     |
| <b>Pay No Tax Limitations</b>          | <b>-0.014***</b> | (0.004)     | <b>-0.077***</b>                 | (0.019)     |
| 1 limitation or less                   | <i>ref.</i>      | <i>ref.</i> | <i>ref.</i>                      | <i>ref.</i> |
| 2-3 limitations                        | <b>0.031*</b>    | (0.017)     | 0.078                            | (0.053)     |
| 4-6 limitations                        | <b>0.072**</b>   | (0.031)     | <b>0.151**</b>                   | (0.075)     |
| 7 or more limitations                  | <b>0.150***</b>  | (0.049)     | <b>0.277***</b>                  | (0.090)     |
| <b>In home iadl</b>                    | 0.053            | (0.034)     | <b>0.205**</b>                   | (0.102)     |
| <b>Outside iadl</b>                    | <b>0.057**</b>   | (0.025)     | <b>0.161***</b>                  | (0.058)     |
| <b>Interfer</b>                        | <b>0.025**</b>   | (0.010)     | <b>0.079***</b>                  | (0.030)     |
| <b>Coliving children education</b>     |                  |             |                                  |             |
| Unmarried Daughter : Low Educ          | 0.001            | (0.009)     | -0.019                           | (0.046)     |
| Unmarried Daughter : High Educ         | -0.004           | (0.006)     | 0.005                            | (0.052)     |
| Daughter in Law : Low Educ             | <b>-0.009**</b>  | (0.004)     | -0.036                           | (0.024)     |
| Daughter in Law : High Educ            | <b>-0.008*</b>   | (0.005)     | -0.022                           | (0.036)     |
| <b>Living close children education</b> |                  |             |                                  |             |
| Daughter : Low Educ                    | <b>-0.010***</b> | (0.004)     | <b>-0.064***</b>                 | (0.019)     |
| Daughter : High Educ                   | <b>-0.012***</b> | (0.004)     | <b>-0.055***</b>                 | (0.020)     |
| <b>Nbr of children living far</b>      | <b>-0.008***</b> | (0.003)     | <b>-0.038**</b>                  | (0.016)     |
| pseudo R2                              | 0.482            |             | 0.468                            |             |

# Conclusion

- Objective
  - Analyze the determining factors of the decision on applying for LTCI
  - Highlight potential causes of primary non-take-up
- Results
  - Positive effect of children living far when no siblings are living close to the parent
  - Negative effect of children living far when other siblings are living close to the parent
  - Negative effect of coliving daughter-in-law and unmarried daughter
  - Negative effect of daughter living in the same town
  - No difference of intensity according to children's opportunity cost
- Two reasons of primary non-take-up
  - Cultural norms
  - Low income

# Conclusion

- Criticism
  - Average age of the sample relatively young (71 years old)
  - Non-payment of taxes as the income proxy
- Further research
  - Use a more accurate variable of income
    - possibility to get LTCI contribution groups ?
  - Determining factors of non-take-up among those who are certified



Thank you for your attention.