

# Long-term care insurance financing using home equity release: Evidence from an online experimental survey

- Online Appendix -

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# Appendix A: Survey screenshots (translated)

## 1. Consent and screening



ARC CENTRE OF  
EXCELLENCE IN  
POPULATION  
AGEING  
RESEARCH



UNSW  
SYDNEY

ARC Centre of Excellence in Population Ageing Research (CEPAR)

ONLINE PARTICIPANT INFORMATION STATEMENT  
Long-term care financing using home equity release  
Professor Hazel Bateman

Participant Information Statement

**1.What is the research study about?**  
You are invited to take part in this research study. The research study aims to analyse a new method to finance long-term care cost using housing wealth. You have been invited because you meet the sample criteria, and your contact details were obtained from the research company dataSpring.

**2.Who is conducting this research?**  
The study is being carried out by the following researchers:

Roles in this research	Name	University
Chief investigator	Professor Hazel Bateman	University of New South Wales (Australia)
Partner investigators	Professor Hanming Fang Dr Katja Hanewald	University of Pennsylvania (USA) University of New South Wales (Australia)
Student investigator	Mr Tin Long Ho	University of New South Wales (Australia)

**Research Funder:** This research is being funded by the University of Pennsylvania.

**3.Inclusion/Exclusion Criteria**  
Before you decide to participate in this research project, we need to ensure that it is ok for you to take part. The research study is looking recruit people who meet the following criteria:

- Aged 45-64
- No difficulties in performing any of the activities of daily living
  - Bathing
  - Dressing
  - Toileting
  - Transferring
  - Continence
  - Feeding
- Own at least 1 residential property in a major city in China
- Have the urban "hukou" of the city that you live in

**4.Do I have to take part in this research study?**  
Participation in any research study is voluntary. If you do not want to take part, you do not have to.

If you decide you want to take part in the research study, you will be asked to:

- Read the information carefully;
- Complete the online questionnaire.

**5.What does participation in this research require, and are there any risks involved?**

If you decide to take part in the research study, we will ask you to complete an online questionnaire. The questionnaire will ask you to undertake several hypothetical tasks concerning products to finance long-term care and to answer some general questions. It should take approximately 25 minutes to complete.

You will be given a certain amount of incentives for your participation in the online survey. You may also be paid bonus incentives depending on the number of correct answers given in a quiz in the survey.

If you experience discomfort or feelings of distress while participating in the research and you require support, you can stop participating at any time.

**6.What are the possible benefits to participation?**  
We hope to use information we get from this research study to benefit others who are making financial plans for their retirement.

**7.What will happen to information about me?**  
Submission of the online questionnaire is an indication of your consent. By clicking the 'I agree to participate' button you are providing your permission for the research team to collect and use information about you for the research study. Your data will be kept for a period of 5 years after the publication of the research results. We will store information about you in a non-identifiable format on a server at the University of New South Wales. Your questionnaire responses will only be used for academic research purposes. The information collected for this research project may be made available to other research projects in non-identified form only.

**8.How and when will I find out what the results of the research study are?**  
The research team intend to publish and report the results of the research study in a variety of ways. All information published will be done in a way that will not identify you.

If you would like to receive a copy of the results you can let the research team know by adding your email or postal address within the consent form. We will only use these details to send you the results of the research. The results will also be made available via the website of CEPAR:  
<http://www.cepar.edu.au/publications/working-papers>.

**9.What if I want to withdraw from the research study?**  
If you do consent to participate, you may withdraw at any time. You can do this by closing the questionnaire. If you withdraw from the research, we will destroy any information that has already been collected. Once you have submitted the questionnaire however, we will not be able to withdraw your responses as the questionnaire is anonymous.

**10.What should I do if I have further questions about my involvement in the research study?**  
The person you may need to contact will depend on the nature of your query. If you require further information regarding this study or if you have any problems which may be related to your involvement in the study, you can contact the following member/s of the research team:

Research Team Contact	
Name	Dr Katja Hanewald
Position	Senior Research Fellow, CEPAR, University of New South Wales
Telephone	+61 2 9385 6174
Email	<a href="mailto:hanewald@unsw.edu.au">hanewald@unsw.edu.au</a>

**What if I have a complaint or any concerns about the research study?**  
If you have a complaint regarding any aspect of the study or the way it is being conducted, please contact the UNSW Human Ethics Coordinator:

Complaints Contact	
Position	Human Research Ethics Coordinator
Telephone	+61 2 9385 6222
Email	<a href="mailto:humanethics@unsw.edu.au">humanethics@unsw.edu.au</a>
HC Reference Number	HC190103

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### Consent Form – Participant providing own consent

You are invited to take part in this research study. The research study aims to analyse a new method to finance long-term care cost using housing wealth.

To participate in the survey, you MUST answer these questions as we need your answers to be able to ask you only relevant questions. Your answers to these questions are confidential, and cannot be used to identify you personally.

#### Declaration by the participant

- ☒ I understand I am being asked to provide consent to participate in this research study;
- ☒ I have read the Participant Information Sheet or it has been provided to me in a language that I understand;
- ☒ I provide my consent for the information collected about me to be used for the purpose of this research study only;
- ☒ I understand that if necessary I can ask questions and the research team will respond to my questions;
- ☒ I freely agree to participate in this research study as described and understand that I am free to withdraw at any time during the study and withdrawal will not affect my relationship with any of the named organisations and/or research team members;
- ☒ I understand that I can download a copy of this consent form from [www.cepar.edu.au](http://www.cepar.edu.au).
- ☐ I agree, tick all box and continue
- ☐ I do not wish to participate

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What was your age at your last birthday?

years old

3%

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What is your gender?

☐ Male

☐ Female

7%

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What is the highest level of education you have attained?

☐ No schooling

☐ Primary School

☐ Junior middle school

☐ High school (高中) or Specialised secondary school (中專)

☐ Two-Year College degree or Diploma (大专)

☐ Bachelor degree from Four-Year University (大学本科)

☐ Master or above

8%

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Do you have any difficulties in performing any of these activities? (Please select all the boxes that are applicable)

☐ Bathing

☐ Dressing

☐ Toileting

☐ Transferring

☐ Continence

☐ Feeding

☐ None of the above

8%

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## 2. *Introductory questions*

### Introductory slide

Thank you for agreeing to participate in this survey about financing long-term care.

Please take as much time as you need to answer the questions. All your answers to the questions are strictly anonymous – that is, no one involved in this study can identify you personally, no one will contact you after the survey and no sales solicitation is involved. Your answers will be used only for academic research.

Please answer each question as honestly as possible. The aim of the survey is to provide a reliable and accurate picture of how people like you feel about the new financial products described in the survey. Please do not use any other sources of information to answer the questions because our research focuses on how you (and others like you) would answer them. Please answer all of the survey questions.

Please DO NOT USE the “back” and “forward” buttons in your browser. Instead, please use the buttons at the bottom of each screen. If you would like to pause the survey to return to it later, simply close the window and click on the original link in the invitation when you are ready to resume. It will return you to the last point of entry in the survey.

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### Introductory questions

In answering these questions, please exclude any properties for which you do not have an owner certificate (房产证).

Excluding all properties that you own, what is the total value of your household savings (including, for example, saving accounts, term deposits, government bonds, stocks, shares in investment funds)?

☐ RMB 0-50,000

☐ RMB 50,001-500,000

☐ RMB 500,001 or more

 10%

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Please provide more details about your household savings. Excluding all properties that you own, what is the total value of your household savings (including, for example, saving accounts, term deposits, government bonds, stocks, shares in investment funds)?

☐ RMB 500,001-1,000,000

☐ RMB 1,000,001-1,500,000

☐ RMB 1,500,001-2,000,000

☐ RMB 2,000,001 or more

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You indicated at the start of the survey that you own a property. For this property (if you own more than one, please focus on the one with the highest current market value). In which year did you receive/purchase it?

---请选择---

12%

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How much did the property cost when you received/purchased it?

*For example, if the value you want to tell us is RMB 1,000,000, please enter 100*

(in RMB 10,000)

13%

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How much do you think this property is worth now?

*For example, if the value you want to tell us is RMB 1,000,000, please enter 100*

(in RMB 10,000)

13%

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Do you still have a mortgage on this property?

☐ Yes

☐ No

14%

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What is the outstanding mortgage loan balance?

*For example, if the value you want to tell us is RMB 1,000,000, please enter 100*

(in RMB 10,000)

15%

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Do you still have outstanding debt owed to family and friends for the purchase of this property?

☐ Yes

☐ No

16%

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What is the outstanding loan amount from family and friends?

*For example, if the value you want to tell us is RMB 1,000,000, please enter 100*

(in RMB 10,000)

 17%

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How many properties do you or your spouse own in total, including the one you just told us about?

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### 3. Information about LTC and choice tasks

#### Facts about health states and long-term care

*Hover your mouse over the blue text for more information.*

As people get older, they are more likely to need help with **activities of daily living** such as bathing or dressing.

In this survey, we refer to an older person as **disabled** if they need help **permanently** with **three or more** of the following **six activities of daily living: bathing, dressing, toileting, transferring, continence, or feeding**. We refer to this help as **long-term care**.

We refer to older persons as **non-disabled** if they only need help with **two or less** of the six activities of daily living.

On average,

**3 out of 10 men aged 60 will eventually become disabled** and will need long-term care as they get older, while **4 out of 10 women aged 55 will eventually become disabled** and will need long-term care as they get older.

#### There are two types of long-term care:

**Informal care:** long-term care provided by the family and/or friends.

**Formal care:** long-term care provided by professional caring personnel. **Formal care** in a basic **residential nursing home** costs about RMB **11,500** per month in today's prices.

When you are **disabled**, you can receive **formal care**, **informal care** or a combination of the two.

**Long-term care income** refers to the regular monthly income you can receive when you and/or your spouse are **disabled** and need long-term care.

*You can click ">>" to continue after 20 seconds.*

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#### New Long-term Care Income Products

In this survey we will ask you to make some choices about three new financial products designed to fund **long-term care**. Each of these products will provide you with an income when you require **long-term care**.

For each of the three **long-term care income** products we will describe the product and show you a case study. We will then ask you to complete a choice task. Finally we will ask you to choose your most preferred and least preferred of the three choices. In total you will complete four (4) choice tasks.

Please read the product descriptions carefully because your understanding will affect the bonus amount that you can earn from the survey.

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### Long-term care income choice tasks

In each of the choice tasks you will be asked you to choose how much long-term care income you would like to buy. Ignoring your own financial circumstances, we want you to imagine that:

- you are aged 60,
- you are married and your spouse is aged 55,
- you are about to retire,
- you own your own home in the city you live in, which is currently worth **RMB 5,000,000**
- you have **RMB 750,000** in your savings account,
- you have no other assets.

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## 4. Choice tasks

### Choice task 1

**Long-term Care Income Product S**

*Hover your mouse over the blue text for more information.*

We would like to introduce you to Long-term Care Income Product S.  
 You buy Long-term Care Income Product S with a single payment from your **savings account**. When you and/or your spouse need **long-term care** you receive a regular monthly income.  
 Please read the product description carefully as your product understanding will be tested in a quiz.  
 The first column lists the product properties. The second column explains these properties for Long-term Care Income Product S.

Product Properties	Long-term Care Income Product S
Who offers this product?	A state-owned bank.
How much do you need to pay at the start of the contract?	The amount of the <b>single payment</b> you make at the <b>start of the contract</b> depends on the size of the monthly income you/your spouse want to receive when you/your spouse need long-term care.
How much <b>long-term care income</b> can you buy at most?	Depends on: Your <b>age</b> , your <b>spouse's age</b> , your <b>gender</b> ; and the <b>amount you wish to pay</b> at the start of the contract.
When can you purchase this product?	When you and your spouse are aged <b>55-65</b> and <b>non-disabled</b> .
What are your benefits?	You/your spouse <b>receive a monthly income</b> when you/your spouse are <b>disabled</b> , for as long as you/your spouse <b>are alive</b> .
How do you receive the income?	The product provider <b>transfers the income</b> into your <b>savings account</b> each month.
Do you receive any income when you and your spouse are <b>non-disabled</b> ?	No.
What happens when one spouse is <b>disabled</b> , and the other spouse is <b>non-disabled</b> ?	The <b>disabled</b> spouse can <b>choose</b> to move to a <b>residential nursing home</b> or to <b>stay at home</b> . You can <b>use</b> the monthly income <b>for any purpose</b> , including but <b>not limited</b> to pay for <b>formal care</b> or to <b>compensate family members/friends</b> for <b>informal care</b> .
What happens when both spouses are <b>disabled</b> , or one spouse is <b>disabled</b> , and the other spouse is deceased?	You/your spouse will <b>need</b> to move to a <b>residential nursing home</b> . You can <b>use</b> the monthly income <b>for any purpose</b> , including but <b>not limited</b> to pay for <b>formal care</b> or to <b>compensate family members/friends</b> for <b>informal care</b> at the residential nursing home.
Who will determine your health status?	You <b>choose</b> a doctor from a list of doctors <b>appointed by the government</b> . The doctor <b>determines</b> whether you/your spouse are <b>non-disabled</b> or <b>disabled</b> . Once you/your spouse are <b>disabled</b> , you/your spouse will be <b>entitled to receive</b> the monthly income benefits for <b>as long</b> as you/your spouse are <b>alive</b> .
Do you have to make a claim to receive the monthly income when you need long-term care?	No. The doctor will <b>inform</b> the product provider to <b>transfer the monthly income</b> to you.
When do you pay the product provider?	You make a <b>single payment</b> at the <b>start</b> of the contract.
When does the contract terminate?	When you and your spouse <b>pass away</b> .
Can you terminate the contract earlier?	Yes, but you will <b>not receive</b> the regular income if you later need long-term care.

*You can click ">>" to continue after 20 seconds.*

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### Case study for Long-term Care Income Product S

*Hover your mouse over the blue text for more information.*

Please read the following case study which illustrates how [Long-term Care Income Product S](#) works.

Mr. Wang is aged 60 and Mrs. Wang is aged 55 in 2019. They live in their own apartment in Beijing which is worth RMB 5,000,000 and have RMB 750,000 in their savings account. They decide to buy [Long-term Care Income Product S](#) to cover their future long-term care needs.

- They choose to use RMB 200,000 from their savings account to buy long-term care income with [Long-term Care Income Product S](#).
- If one or both are disabled, they will receive a **monthly income** according to the following table:

Both <a href="#">non-disabled</a> /deceased	1 <a href="#">non-disabled</a> /deceased, 1 <a href="#">disabled</a>	Both <a href="#">disabled</a>
RMB 0/month	RMB 3,514/month	RMB 7,028 /month

- The couple **fully own their apartment**, including all growth in its value, if any.

This contract will **terminate** when **both** Mr. and Mrs. Wang **pass away**.

Assume that Mr. Wang remains [non-disabled](#) and **passes away in 2044**. In the **same** year, Mrs. Wang becomes [disabled](#) and **permanently moves** into a **residential nursing home**. She will receive a [long-term care income](#) of RMB 3,514/month **until she passes away**. When she passes away, their daughter inherits the apartment.

How do you rate your understanding of [Long-term Care Income Product S](#)?

☐ Completely clear


☐ Mostly clear

☐ Generally clear

☐ Mostly confusing

☐ Completely confusing

*You can click ">>" to continue after 20 seconds.*

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**Task 1 of 4: Long-term Care Income Product S**

*Hover your mouse over the blue text for more information.*

In this choice task, assume you have **RMB 750,000** in your savings account and your home is worth **RMB 5,000,000**. You can use the money in your savings account to purchase **long-term care income** with **Long-term Care Income Product S**.

The decision you have to make is:

**Would you like to buy long-term care income with Long-term Care Income Product S? And if you do**

**How much of your savings do you want to use to buy long-term care income ?**

Use the slider below to indicate your choice. The outcomes of your choice are summarised in the table below.

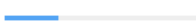
You can position the slider anywhere on the line, but you need to move it at least once before you can continue. **If you DON'T want to buy Long Term Care Product S place the slider at RMB 0.**



	Outcome
Regular income when you and your spouse are <b>non-disabled</b>	<b>RMB 0</b> per month
Regular income when one spouse is <b>disabled</b> , and the other spouse is <b>non-disabled</b> or deceased	<b>RMB 0</b> per month This would cover <b>0%</b> of the cost of <b>formal care</b> in a residential nursing home for one person or compensate your family/friends who take care of you.
Regular income when both spouses are <b>disabled</b>	<b>RMB 0</b> per month This would cover <b>0%</b> of the cost of <b>formal care</b> in a residential nursing home for you and your spouse or compensate your family/friends who take care of you.
Total payment for <b>long-term care income</b>	Single payment of <b>RMB 0</b> at the start of the contract
Payment for <b>long-term care income</b> from your savings account	Single payment of <b>RMB 0</b> at the start of the contract
Remaining money in your savings account	<b>RMB 0</b>
Your remaining housing wealth	<b>RMB 5,000,000</b>
Your remaining total wealth	<b>RMB 0</b>
Additional features:	You receive the monthly income for as long as you/your spouse are <b>disabled</b>

Why did you not purchase more long-term care income with **Long-term Care Income Product S**? Please only choose the main reason.

- ☐ I think I can manage long-term care risk.
- ☐ My children/grandchildren will care for me when I am old.
- ☐ I think the product is too complex.
- ☐ I do not think the product is a good deal.
- ☐ I do not trust the product provider.

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## Choice task 2

Long-term Care Income Product R

Hover your mouse over the blue text for more information.

We would like to introduce you to [Long-term Care Income Product R](#).

You buy Long-term Care Income Product R by **borrowing against your home**. When you and/or your spouse need [long-term care](#), you receive a regular monthly income.

Please read the product description carefully as your product understanding will be tested in a quiz.

The first column lists the product properties. The second column explains these properties for [Long-term Care Income Product R](#).

	Long-term Care Income Product R
Who offers this product?	A state-owned bank.
<b>Product properties when you are alive</b>	
How much do you need to pay at the start of the contract?	No payments required.
Is your home used as a collateral?	Yes.
Can you continue to live in your home?	Yes. You and your spouse have a guaranteed right to live in your home while at least one of you is <a href="#">non-disabled</a> .
Do you retain the full legal right of your home?	Yes. For example, you can rent out your home.
How much <a href="#">long-term care income</a> can you buy at most?	Depends on: Your <b>age</b> , your <b>spouse's age</b> , your <b>gender</b> , the <b>amount you wish to pay</b> at the start of the contract and the value of your home at the start of the contract
How is the home value assessed?	The value of your home is assessed by an <b>independent, authorized appraiser</b> .
When can you purchase this product?	When you and your spouse are aged 55-65 and <a href="#">non-disabled</a> .
What are your benefits?	You/your spouse <b>receive a monthly income</b> when you/your spouse are <a href="#">disabled</a> , for as long as you/your spouse <b>are alive</b> .
How do you receive the income?	The product provider <b>transfers the income</b> into your <b>savings account</b> each month.
Do you receive any income when you and your spouse are <a href="#">non-disabled</a> ?	No.
What happens when one spouse is disabled, and the other spouse is <a href="#">non-disabled</a> ?	The <a href="#">disabled</a> spouse can <b>choose</b> to move to a <b>residential nursing home</b> or to <b>stay at home</b> . You can <b>use</b> the monthly income <b>for any purpose</b> , including but <b>not limited</b> to pay for <b>formal care</b> or to <b>compensate family members/friends</b> for informal care.
What happens when both spouses are <a href="#">disabled</a> , or one spouse is <a href="#">disabled</a> , and the other spouse is deceased?	You/your spouse will <b>need</b> to move to a <b>residential nursing home</b> . You can <b>use</b> the monthly income <b>for any purpose</b> , including but <b>not limited</b> to pay for <b>formal care</b> or to <b>compensate family members/friends</b> for informal care at the residential nursing home.
Who will determine your health status?	You <b>choose</b> a doctor from a list of doctors <b>appointed by the government</b> . The doctor <b>determines</b> whether you/your spouse are <a href="#">non-disabled</a> or disabled. <b>Once</b> you/your spouse are <a href="#">disabled</a> , you/your spouse will be <b>entitled to receive</b> the monthly income benefits for <b>as long as</b> you/your spouse are <b>alive</b> .
Do you have to make a claim to receive the monthly income when you need <a href="#">long-term care</a> ?	No. The doctor will <b>inform</b> the product provider to <b>transfer the monthly income</b> to you.
Will this product incur any loan?	Yes, but <b>no repayments</b> are required while you/your spouse <b>live in your home</b> .
What is the debt amount?	The <b>cost</b> of the <a href="#">long-term care income</a> becomes a debt which <b>accumulates interest</b> .
What is the interest rate on the loan?	5.80% p.a. <b>Set</b> by the government. <b>Fixed</b> at the <b>start</b> of the contract.
Can you terminate the contract earlier?	Yes, you can.
What do you need to do to terminate the contract earlier?	<b>Repay</b> the loan
<b>Product properties when both of you are deceased/move to a residential nursing home</b>	
What happens after you and your spouse have both passed away or moved into a residential nursing home?	The product provider will <b>sell your property</b> at the <b>highest possible market price</b> .
What happens to the sale proceeds?	The sale proceeds are used to repay the loan. If the sale proceeds <b>exceed</b> the loan amount, you/your spouse/your heirs can <b>retain</b> the difference. If the sale proceeds are <b>insufficient</b> to <b>cover</b> the debt, you/your spouse/your heirs are <b>not</b> required to make an extra payment.
Can your heirs remain in the property when you and your spouse pass away?	Yes. Your heirs have <b>the option</b> to <b>repay</b> the debt and <b>keep your home</b> .
When does the contract terminate?	When <b>you and your spouse</b> are deceased.

You can click ">>" to continue after 20 seconds.

29%

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### Case study for Long-term Care Income Product R

Hover your mouse over the blue text for more information.

Please read the following case study which illustrates how Long-term Care Income Product R works.

Mr. Wang is aged 60 and Mrs. Wang is aged 55 in 2019. They have an adult daughter. They live in their own apartment in Beijing which is worth RMB 5,000,000 and have RMB 750,000 in their savings account. They decide to buy Long-term Care Income Product R to cover their future long-term care needs.

- They choose to **borrow RMB 600,000 against their apartment** to buy long-term care income with Long-term Care Income Product R. The amount becomes a debt which accumulates interest at the fixed interest rate of 5.8% p.a
- If one or both are disabled, they will receive a **monthly income** according to the following table:

Both non-disabled/deceased	1 non-disabled/deceased, 1 disabled	Both disabled
RMB 0/month	RMB 10,542/month	RMB 21,085 /month

- They do **not have to repay anything** while **at least one of them still lives at home**.
- The couple **fully own their apartment**, including all growth in its value, if any.

This contract will **terminate** when **both** Mr. and Mrs. Wang **pass away**.

Assume that Mr. Wang remains **non-disabled** and **passes away in 2044**. In the **same** year, Mrs. Wang becomes **disabled** and **permanently moves** into a **residential nursing home**. The **outstanding debt** amount in **2044** accumulated from the **initial loan** is **RMB 2,456,000**. Below are **three** possible **scenarios** in 2044:

- **Scenario A:** The product provider **sells the home at the highest possible market price** of **RMB 10,000,000**. The sale proceeds are used to **repay** the debt. Mrs. Wang **receives the remaining RMB 7,544,000**. She will receive a **long-term care income** of **RMB 10,542/month until she passes away**.
- **Scenario B:** The product provider **sells the home at the highest possible market price** of only **RMB 1,000,000**. All sale proceeds **are used to repay** the debt. Mrs. Wang will **receive nothing from the sale**, but she is **not required to make an extra payment**. The difference is a loss to the product provider. Mrs. Wang will receive a **long-term care income** of **RMB 10,542/month until she passes away**.
- **Scenario C:** Their daughter decides to **repay the debt herself** and **keep** their property. Mrs. Wang will receive a **long-term care income** of **RMB 10,542/month until she passes away**.

How do you rate your understanding of Long-term Care Income Product R?

☐ Completely clear

☐ Mostly clear

☐ Generally clear

☐ Mostly confusing

☐ Completely confusing

You can click ">>" to continue after 20 seconds.

33%

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Next >>



#### Task 2 of 4: Long-term Care Income Product R

Hover your mouse over the blue text for more information.

In this choice task, assume, you have **RMB 750,000** in your savings account and your home is worth **RMB 5,000,000**. You can use the money in your savings account to purchase long-term care income with Long-term Care Income Product S. You can also borrow against your home to purchase long-term care income with Long-term Care Income Product R.

Use the two sliders below to indicate your choices. You can buy long-term care income with your savings (Long-term Care Income Product S) and/or borrow against your home (Long-term Care Income Product R). The outcomes of your choice are summarised in the table below.

The decisions you have to make are:

Would you like to buy long-term care income? And if you do

**MRa. How much of your savings do you want to use to buy long-term care income with Long-term Care Income Product S?**

You can position the slider anywhere on the line, but you need to move it at least once before you can continue. If you DON'T want to buy Long Term Care Product S place the slider at RMB 0.



**MRb. How much do you want to borrow against your home to buy long-term care income with Long-term Care Income Product R?**

You can position the slider anywhere on the line, but you need to move it at least once before you can continue. If you DON'T want to buy Long Term Care Product R place the slider at RMB 0.



	Outcome
Regular income when you and your spouse are non-disabled	RMB 0 per month
Regular income when one spouse is disabled, and the other spouse is non-disabled or deceased	RMB 0 per month This would cover 0.00% of the cost of formal care in a residential nursing home for one person or compensate your family/friends who take care of you.
Regular income when both spouses are disabled	RMB 0 per month This would cover 0.00% of the cost of formal care in a residential nursing home for you and your spouse or compensate your family/friends who take care of you.
Total payment for long-term care income	RMB 0
Payment for long-term care income from your savings account	RMB 0
Payment for long-term care income from Long-term Care Income Product R	RMB 0 loan with annual interest rate 5.80% p.a.
Remaining money in your savings account	RMB 0
Your remaining housing wealth	RMB 0
Your remaining total wealth	RMB 0
Additional features:	You receive the monthly income for as long as you/your spouse are disabled

Why did you not purchase more of Long-term Care Income Product R to pay for the long-term care income? Please only choose the main reason.

- ☐ I think I can manage long-term care risk.
- ☐ My children/grandchildren will care for me when I am old.
- ☐ I think the product is too complex.
- ☐ I do not think the product is a good deal.
- ☐ I do not trust the product provider.
- ☐ I do not want to have a (higher) loan.
- ☐ I am worried that I would be evicted from my property.

36%

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### Choice task 3

**Long-term Care Income Product H**

Hover your mouse over the blue text for more information.

We would like to introduce you to [Long-term Care Income Product H](#).

You buy Long-term Care Income Product H by selling part of your home. When you and/or your spouse need [long-term care](#), you receive a regular monthly income.

Please read the product description carefully as your product understanding will be tested in a quiz.

The first column lists the product properties. The second column explains these properties for [Long-term Care Income Product H](#).

	Long-term Care Income Product H
Who offers this product?	A state-owned bank.
<b>Product properties when you are alive</b>	
How much do you need to pay at the start of the contract?	No payments required.
Is your home used as a collateral?	No, a <b>part of your home</b> is sold to the product provider.
Can you continue to live in your home?	Yes. You and your spouse have a guaranteed right to live in your home while at least one of you is non-disabled.
Do you retain the full legal right of your home?	No, but you can still rent out your home.
How much <a href="#">long-term care income</a> can you buy at most?	Depends on: Your <b>age</b> , your <b>spouse's age</b> , your <b>gender</b> , the <b>amount you wish to pay</b> at the start of the contract and the value of your home at the start of the contract
How is the home value assessed?	The value of your home is assessed by an <b>independent, authorized appraiser</b> .
When can you purchase this product?	When you and your spouse are aged <b>55-65</b> and <b>non-disabled</b> .
What are your benefits?	You/your spouse <b>receive a monthly income</b> when you/your spouse are <b>disabled</b> , for as long as you/your spouse <b>are alive</b> .
How do you receive the income?	The product provider <b>transfers the income</b> into <b>your savings account</b> each month.
Do you receive any income when you and your spouse are non-disabled?	No.
What happens when one spouse is disabled, and the other spouse is non-disabled?	The <b>disabled</b> spouse can <b>choose</b> to move to a <b>residential nursing home</b> or to <b>stay at home</b> . You can <b>use</b> the monthly income <b>for any purpose</b> , including but <b>not limited</b> to pay for <b>formal care</b> or to <b>compensate family members/friends</b> for informal care.
What happens when both spouses are disabled, or one spouse is disabled, and the other spouse is deceased?	You/your spouse will <b>need</b> to move to a <b>residential nursing home</b> . You can <b>use</b> the monthly income <b>for any purpose</b> , including but <b>not limited</b> to pay for <b>formal care</b> or to <b>compensate family members/friends</b> for informal care at the residential nursing home.
Who will determine your health status?	You <b>choose</b> a doctor from a list of doctors <b>appointed by the government</b> . The doctor <b>determines</b> whether you/your spouse are <b>non-disabled</b> or <b>disabled</b> . <b>Once</b> you/your spouse are <b>disabled</b> , you/your spouse will be <b>entitled to receive</b> the monthly income benefits for <b>as long as</b> you/your spouse are <b>alive</b> .
Do you have to make a claim to receive the monthly income when you need long-term care?	No. The doctor will <b>inform</b> the product provider to <b>transfer the monthly income</b> to you.
Can you terminate the contract earlier?	Yes, you can.
What do you need to do to terminate the contract earlier?	<b>Buy back</b> the proportion you sold to the product provider
<b>Product properties when both of you are deceased/move to a residential nursing home</b>	
What happens after you and your spouse have both passed away or moved into a residential nursing home?	The product provider will <b>sell your property</b> at the <b>highest possible market price</b> .
What happens to the sale proceeds?	The sale proceeds are <b>split</b> into two parts. The product provider <b>keeps</b> the sale proceeds of the <b>proportion</b> you sold. You/your spouse/your heirs <b>receive</b> the <b>sale proceeds</b> from the <b>proportion you own</b> .
Can your heirs remain in the property when you and your spouse pass away?	Yes. Your heirs have the <b>option to buy back</b> the proportion you sold and <b>keep your home</b> .
When does the contract terminate?	When <b>you and your spouse</b> are deceased.

You can click ">>" to continue after 20 seconds.

37%

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### Case study for Long-term Care Income Product H

Hover your mouse over the blue text for more information.

Please read the following case study which illustrates how [Long-term Care Income Product H](#) works.

Mr. Wang is aged 60 and Mrs. Wang is aged 55 in 2019. They have an adult daughter. They live in their own apartment in Beijing which is worth RMB 5,000,000 and have RMB 750,000 in their savings account. They decide to buy [Long-term Care Income Product H](#) to cover their future [long-term care](#) needs.

- They choose to **sell** RMB 2,044,000 **of their apartment** to buy long-term care income with Long-term Care Income Product H.
- If one or both are disabled, they will receive a **monthly income** according to the following table:

Both <a href="#">non-disabled/deceased</a>	1 <a href="#">non-disabled/deceased</a> , 1 <a href="#">disabled</a>	Both <a href="#">disabled</a>
RMB 0/month	RMB 10,542/month	RMB 21,085/month

- They do **not have to pay anything** while **at least one of them** still **lives at home**.
- They still **own a part** of the apartment.

This contract will **terminate** when **both** Mr. and Mrs. Wang **pass away**.

Assume that Mr. Wang remains [non-disabled](#) and **passes away in 2044**. In the **same** year, Mrs. Wang becomes [disabled](#) and **permanently moves** into a **residential nursing home**. Below are **three** possible **scenarios** in 2044:

- [Scenario A](#): The product provider **sells the home at the highest possible market price** of RMB 10,000,000. Mrs. Wang receives RMB 5,912,000 from the sale proceeds. She will receive a [long-term care income](#) of RMB 10,542/month **until she passes away**.
- [Scenario B](#): The product provider **sells the home at the highest possible market price** of only RMB 1,000,000. Mrs. Wang receives RMB 591,000 from the sale proceeds. Mrs. Wang will receive a [long-term care income](#) of RMB 10,542/month **until she passes away**.
- [Scenario C](#): Their daughter decides to **buy back** and **keep** their property. Mrs. Wang will receive a [long-term care income](#) of RMB 10,542/month **until she passes away**.

How do you rate your understanding of [Long-term Care Income Product H](#)?

☐ Completely clear

☐ Mostly clear

☐ Generally clear

☐ Mostly confusing

☐ Completely confusing

You can click ">>" to continue after 20 seconds.

43%

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### Task 3 of 4: Long-term Care Income Product H

Hover your mouse over the blue text for more information.

In this choice task, assume, you have **RMB 750,000** in your savings account and your home is worth **RMB 5,000,000**. You can use the money in your savings account to purchase long-term care income with Long-term Care Income Product S. You can also borrow against your home to purchase long-term care income with Long-term Care Income Product H.

Use the two sliders below to indicate your choices. You can buy long-term care income with your savings (Long-term Care Income Product S) and/or borrow against your home (Long-term Care Income Product H). The outcomes of your choice are summarised in the table below.

The decisions you have to make are:

Would you like to buy long-term care income? And if you do

MHa. How much of your savings do you want to use to buy long-term care income with Long-term Care Income Product S?

You can position the slider anywhere on the line, but you need to move it at least once before you can continue. If you DON'T want to buy Long Term Care Product S place the slider at RMB 0.



MHb. How much of your home do you want to sell to buy long-term care income with Long-term Care Income Product H?

You can position the slider anywhere on the line, but you need to move it at least once before you can continue. If you DON'T want to buy Long Term Care Product H place the slider at RMB 0.



	Outcome
Regular income when you and your spouse are non-disabled	RMB 0 per month
Regular income when one spouse is disabled, and the other spouse is non-disabled or deceased	RMB 0 per month This would cover 0.00% of the cost of formal care in a residential nursing home for one person or compensate your family/friends who take care of you.
Regular income when both spouses are disabled	RMB 0 per month This would cover 0.00% of the cost of formal care in a residential nursing home for you and your spouse or compensate your family/friends who take care of you.
Total payment for long-term care income	RMB 0
Payment for long-term care income from your savings account	RMB 0
Payment for long-term care income from Long-term Care Income Product H	RMB 0 is sold
Remaining money in your savings account	RMB 0
Your remaining housing wealth	RMB 0
Your remaining total wealth	RMB 0
Additional features:	You receive the monthly income for as long as you/your spouse are disabled

Why did you not purchase more of Long-term Care Income Product H to pay for the long-term care income? Please only choose the main reason.

- ☐ I think I can manage long-term care risk.
- ☐ My children/grandchildren will care for me when I am old.
- ☐ I think the product is too complex.
- ☐ I do not think the product is a good deal.
- ☐ I do not trust the product provider.
- ☐ I do not want to sell (more) part of the property.
- ☐ I am worried that I would be evicted from my property.

47%

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## Choice task 4

### Task 4 of 4: Which of the following choices do you prefer?

Hover your mouse over the blue text for more information.

The following table summarises the three choices you have just made to buy long-term care income. We now ask you to choose which of the three choices would be BEST for you and which of the three choices would be WORST for you.

Product Properties	A Task 1 choice Long-term Care Income Product S	B Task 2 choice Long-term Care Income Product R	C Task 3 choice Long-term Care Income Product H
Regular income when you and your spouse are <b>non-disabled</b>	0 per month		
Regular income when <b>one</b> spouse is <b>disabled</b> and the other spouse is <b>non-disabled</b> or deceased	RMB 1,757 per month	RMB 4,393 per month	RMB 2,508 per month
Regular income when <b>both</b> spouses are <b>disabled</b>	RMB 3,514 per month	RMB 8,786 per month	RMB 5,016 per month
Total payment for long-term care income	Single payment of RMB 100,000 at the beginning of the contract	RMB 250,000	RMB 142,734
Payment for long-term care income from your savings account	RMB 100,000	RMB 50,000	RMB 40,000
Payment for long-term care income from Long-term Care Income Product R	Not applicable	RMB 200,000 loan with annual interest rate 5.8% p.a.	Not applicable
Value of home sold through Long-term Care Income Product H	Not applicable	Not applicable	RMB 350,000 is sold
Remaining money in your savings account	RMB 650,000	RMB 700,000	RMB 710,000
Your remaining housing wealth	RMB 5,000,000	RMB 5,000,000	RMB 4,650,000
Your remaining total wealth	RMB 5,650,000	RMB 5,700,000	RMB 5,360,000
Additional comments:	You receive the monthly income for as long as you/your spouse are disabled		
Which one of A, B or C would be <b>BEST</b> for you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Which one of A, B or C would be <b>WORST</b> for you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

47%

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## 5. Product quiz

### Product knowledge

Hover your mouse over the blue text for more information.

Now we would like to review your knowledge of the three Long-term Care Income Products.

Which of the following statement(s) apply to each of the products –[Long-term Care Income Product S](#), [R](#) and [H](#)? Please tick the boxes to indicate to which product or products a statement applies. Your bonus payment depends on the number of correct answers in this quiz. Scores are awarded for each correct answer.

	Long-term Care Income Product S	Long-term Care Income Product R	Long-term Care Income Product H
You can receive a monthly income as long as you are alive, even when you are non-disabled.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You pay a lump sum but nothing else at the start of the contract to purchase this product.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You can use the income from the product to compensate your family/friends who take care of you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the end of the contract, if the house price is higher than the loan amount, you (or your heirs) can receive the difference between the house price and loan amount.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the end of the contract, you (or your heirs) will receive a percentage from the sale of the residential property.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The interest rate charged in this contract is fixed during the term of the contract.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the start of the contract, you will need to choose the percentage of your property to sell.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the end of the contract, you/your spouse/your heirs will have a chance of receiving nothing when your property is sold.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

 49%

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Next >>

You have 24 correct answers out of 24.

 51%

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Next >>

## 6. *Covariates questions*

You have now completed the choice tasks. Next we will ask you three sets of standard survey questions on:

1. Demographics and health
2. Financial competence and retirement planning
3. Preferences and expectations

 52%

<< Prev

Next >>

### 1. Demographics and health

*The next set of questions will cover employment, marital status, children, income and debt*

Which of the following best describes your current employment situation?

- ☐ Employed by someone else
- ☐ Self-employed
- ☐ Unemployed including structurally unemployed (Xia Gang)
- ☐ Retired
- ☐ Not in the labour force - stay-at-home parent or caregiver
- ☐ Not in the labour force - other reasons

 53%

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Next >>

### 1.Demographics and health

Who are you working for? If you are retired or not in the labour force, please answer according to your most recent previous job.

- ☐ Government (政府机构)
- ☐ Public institution (事业单位)
- ☐ Non-government organisation (非政府组织, 社团, 协会, 学会, 等等)
- ☐ State-owned enterprise (国有企业)
- ☐ Private company including foreign firm (私营企业, 包括外资企业)
- ☐ Individual firm and freelancer (个体户)
- ☐ Farmer (农户)
- ☐ Never worked
- ☐ Other

 55%


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Next >>

### 1.Demographics and health

What is your marital status?

- ☐ Never married
- ☐ Married (including living in a long-term partnership)
- ☐ Divorced
- ☐ Separated
- ☐ Widowed

 56%

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Next >>

### 1.Demographics and health

What is your spouse's age? Answer:  years

 57%

<< Prev

Next >>



1.Demographics and health

How many children do you have that are still alive? Answer:  children

58%

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Next > >

1.Demographics and health

Please provide the following information on your child(ren)

	Gender	Age	Residence of child	Personal income (annual) of the child
1st child	Male ▾	31 <input type="text"/>	Live in the same household ▾	More than 120,000 ▾

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59%

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1.Demographics and health

How many grandchildren do you have that are still alive? Answer:  grandchildren

60%

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### 1.Demographics and health

Please provide the following information on your grandchild(ren)

	Gender	Age	Residence of grandchild	Personal income (annual) of the grandchild
1st grandchild	Female ▼	1	Live in the same household ▼	Less than RMB 40,000 ▼

61%

<< Prev

Next >>

### 1.Demographics and health

Do you/your spouse have social health insurance?

	Yes	No
Myself:	<input type="radio"/>	<input type="radio"/>
Spouse:	<input type="radio"/>	<input type="radio"/>

63%

<< Prev

Next >>

### 1.Demographics and health

Excluding all mortgages, what is the total value of your household debt? (including for example money borrowed from relatives, friends, or using credit cards, and bank loans other than mortgages)

☐ RMB 0-2,000

☐ RMB 2,000-9,999

☐ RMB 10,000-49,999

☐ RMB 50,000-99,999

☐ RMB 100,000-249,999

☐ RMB 250,000-499,999

☐ RMB 500,000-999,999

☐ RMB 1,000,000 or more

64%

<< Prev

Next >>

### 1.Demographics and health


What was your household income (including bonuses and pension income) in the last year after paying tax and social security contributions?

☐ RMB 0-39,999 per year

☐ RMB 40,000-69,999 per year

☐ RMB 70,000-119,999 per year

☐ RMB 120,000 or more per year

 65%

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Next >>

### 1.Demographics and health

Please provide more details about your household income. What was your household income (including bonuses and pension income) in the last year after paying tax and social security contributions?

☐ RMB 120,000-149,999 per year

☐ RMB 150,000-199,999 per year

☐ RMB 200,000-299,999 per year

☐ RMB 300,000 or more per year

 66%

<< Prev

Next >>

### 1.Demographics and health

Do you smoke now?

☐ Ever smoked, currently smoking

☐ Ever smoked, currently not smoking

☐ Never smoked

 67%

<< Prev

Next >>

### 1.Demographics and health

Compared to the population, what do you think are the chances you will ever need **formal care** at home?

☐ Higher probability of needing formal care at home than the average for people of your age and gender

☐ Lower probability of needing formal care at home than the average for people of your age and gender

 68%

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Next >>

### 1.Demographics and health

Compared to the population, what do you think are the chances you will ever need **formal care** in a residential nursing home?

☐ Higher probability of needing formal care in a residential nursing home than the average for people of your age and gender

☐ Lower probability of needing formal care in a residential nursing home than the average for people of your age and gender

 69%

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Next >>

### 1.Demographics and health

Would you say your/your spouse's health is excellent, very good, good, fair, or poor?

	Excellent	Very good	Good	Fair	Poor
Myself:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spouse:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

 70%

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Next >>

### 1.Demographics and health

Compared to one year ago, how would you rate your health in general now?

- ☐ Much better now
- ☐ Somewhat better now
- ☐ About the same
- ☐ Somewhat worse now
- ☐ Much worse now

 72%

<< Prev

Next >>

### 1.Demographics and health

What is the highest level of education you have attained?

- ☐ No schooling
- ☐ Primary School
- ☐ Junior middle school
- ☐ High school (高中) or Specialised secondary schools (中專)
- ☐ Two-Year College degree or Diploma (大专)
- ☐ Bachelor degree from Four-Year University (大学本科)
- ☐ Master or above

Have you seen this question before?

- ☐ Yes
- ☐ No

 74%

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Next >>

### 1.Demographics and health

To what age do you think you are going to live? Answer:  years

 75%

<< Prev

Next >>

### 1.Demographics and health

To what age do you think your spouse is going to live? Answer:  years

 76%

<< Prev

Next >>

## 2. Financial Competence and Planning

*This set of questions covers financial literacy, numeracy, knowledge of financial products and retirement planning*

### Financial literacy

Suppose you had RMB 100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

☐ More than RMB 102

☐ Exactly RMB 102

☐ Less than RMB 102

☐ Do not know

Imagine the interest rate in your savings account is 1% per year and inflation is 2% per year. After 1 year, how much would you be able to buy with the money in this account?

☐ More than today

☐ Exactly the same

☐ Less than today

☐ Do not know

Please evaluate whether this statement is true or false. "Buying shares of a single company usually provides a safer return than buying units in a managed share funds" .

☐ True

☐ False

☐ Do not know

 80%

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Next >>

## 2. Financial Competence and Planning

### Numeracy

Imagine that we rolled a fair, six-sided die 1,000 times. Out of 1,000 rolls, how many times do you think the die would come up even (2, 4, or 6)?

*Please enter a number between 0 and 1,000 in the box.*

Answer:  times

In a lottery, the chances of winning a RMB 500 prize is 1%. What is your best guess about how many people would win the prize if 1,000 people each buy a single ticket to the lottery?

*Please enter a number between 0 and 1,000 in the box.*

Answer:  people

In a raffle, the chance of winning a car is 1 in 1,000. What percent of tickets in the raffle win a car?

*Please enter a percentage in the box.*

Answer:  percentage

 83%

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Next >>

## 2. Financial Competence and Planning

### Financial product knowledge

Before participating in this survey, had you heard of any of the following financial products?

	Yes	No
Bank accounts	<input type="radio"/>	<input type="radio"/>
Fixed term deposit	<input type="radio"/>	<input type="radio"/>
Government bonds	<input type="radio"/>	<input type="radio"/>
Shares (Stocks)	<input type="radio"/>	<input type="radio"/>
Shares in an investment fund (基金)	<input type="radio"/>	<input type="radio"/>
Credit card	<input type="radio"/>	<input type="radio"/>
Money market fund (e.g., Yu'eBao)	<input type="radio"/>	<input type="radio"/>
Commercial health insurance	<input type="radio"/>	<input type="radio"/>
Life insurance	<input type="radio"/>	<input type="radio"/>
Long-term care insurance	<input type="radio"/>	<input type="radio"/>
Critical illness insurance	<input type="radio"/>	<input type="radio"/>
Commercial pension	<input type="radio"/>	<input type="radio"/>
Life annuity	<input type="radio"/>	<input type="radio"/>
Enterprise annuity	<input type="radio"/>	<input type="radio"/>
"House for Pension" (Reverse mortgage in China)	<input type="radio"/>	<input type="radio"/>

 84%

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Next >>



## 2. Financial Competence and Planning

### Retirement planning

At what age do you plan to retire? (Or at what age did you retire if you are already retired)

Answer:  years old

 85%

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Next >>

## 2. Financial Competence and Planning

Which of the following statements best describes your thoughts about the financial aspects of retirement?

☐ I've not thought about what savings I will need for retirement.

☐ I've checked out my current savings position and started to think about what I will need for retirement.

☐ I've a firm idea of what I need for retirement and I'm not on track to reach my savings goal.

☐ I've a firm idea of what I need for retirement and I'm on track to reach my savings goal.

 86%

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Next >>

## 2. Financial Competence and Planning

For many households, overall spending changes dramatically upon retirement. Please indicate below what your experience has been (if you are retired), or what your expectations are (if not retired)

☐ My household had (or expects to have) no change in spending at retirement

☐ My household has spent (or will spend) more after retirement than before

☐ My household has spent (or will spend) less after retirement than before

 88%

<< Prev

Next >>

## 2. Financial Competence and Planning

Have you given a thought about how you will pay for long-term-care expenses before you participated in this survey?

☐ Yes

☐ No

 89%

<< Prev

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## 2. Financial Competence and Planning

To what extent do the following statements apply to you? Please tick one box on the scale where 0 means 'certainly not' and 10 means 'certainly yes'.

	certainly not	0	1	2	3	4	5	6	7	8	9	10	certainly yes
I have/expect to have enough retirement income.													
I have enough savings.													
I would like to leave an inheritance.													

 90%

<< Prev

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## 3. Preferences and expectations

*The final set of questions covers risk preferences, patience, expectations about needing long-term care and house price expectations*

### Risk preferences

How do you see yourself: Are you generally a person who is fully prepared to take risks in financial matters or do you try to avoid taking risks in financial matters? Please tick one box on the scale where 0 means 'not prepared to take risks' and 10 means 'fully prepared to take risks'.

Not prepared to take risks	0	1	2	3	4	5	6	7	8	9	10	fully prepared to take risks

 91%

<< Prev

Next >>



### 3.Preferences and expectations

#### Long-term care expectations and preferences

In the future when you are getting older, you may need someone to care for you and help you with your activities of daily living. In the following table, please tick all answers that apply to you.

	Spouse	Children and/or gr andchildren	Caregiver living in home	Caregiver visiting h ome	Nursing home
Who is the most likely to provide care for you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Who do you prefer to pro vide care for you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

 95%

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Next >>

### 3.Preferences and expectations

#### House price expectations

Over the last five years, do you think the value of your home:

- ☐ Increased a lot (greater than 20%)
- ☐ Increased moderately (between 5% and 20%)
- ☐ Remained rather stable (between 5% and -5%)
- ☐ Decreased moderately (between -5% and -20%)
- ☐ Decreased a lot (greater than -20%)

 97%

<< Prev

Next >>

### 3.Preferences and expectations

In the next 5 years do you think the value of your home:

- ☐ Increased a lot (greater than 20%)
- ☐ Increased moderately (between 5% and 20%)
- ☐ Remained rather stable (between 5% and -5%)
- ☐ Decreased moderately (between -5% and -20%)
- ☐ Decreased a lot (greater than -20%)

 98%

<< Prev

Next >>

### Survey feedback

How clear do you think the questions in this survey are?

- ☐ Completely clear
- ☐ Mostly clear
- ☐ Sometimes clear
- ☐ Sometimes confusing
- ☐ Mostly confusing
- ☐ Completely confusing

 99%

<< Prev

Next >>

## Appendix B

### *B.1 The pilot reverse mortgage product in China*

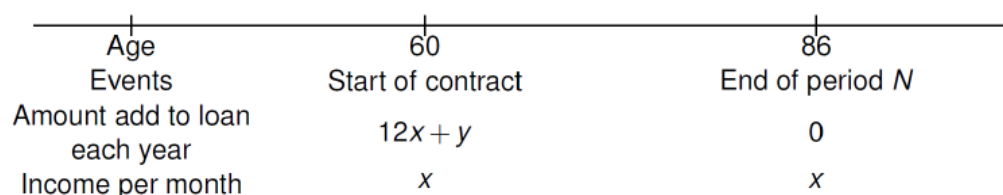
Happy Life Insurance issued an income stream type RM. This contract has an embedded ‘no negative equity guarantee’, similar to the US home equity conversion mortgage (HECM). The ‘no negative equity guarantee’ property ensures that households do not have to pay anything out-of-pocket (except the housing asset) to terminate the contract. If the loan account balance is lower than the house price, the remaining proceeds will be delivered to the heirs of the household. Therefore, a household can enjoy the upside risk of the house price and the provider will bear the downside risk of the house price. It is important to note that when a household enters the contract, a loan account is set up. The loan amount will be settled when the household sells the property or passes away. The general income stream type reverse mortgage will deliver an amount of \$ $x$  per month, and this amount will be added to the loan account. In addition, an interest rate of  $r\%$  p.a. is charged each month on the loan account balance.

The product issued by Happy Life Insurance is further split into two streams: ‘with death benefit’ and ‘without death benefit’. For simplicity, further detail regarding the ‘without death benefit’ stream is presented. This product splits the retirement period of the household into two periods; the first  $N$  years is termed the ‘deferred annuity premium paying period’ and the second period the ‘no premium required period’. In the first  $N$  years, apart from being charged \$ $x$  per month for the benefit received, the household is charged another amount, \$ $y$ , annually, and this amount is also added to the loan account at the start of each year. This amount is treated as the premium for the deferred annuity. After  $N$  years, i.e. upon entering the second period of the contract, the households are neither charged  $x$  per month nor  $y$  per year, but they are still eligible to the benefit of \$ $x$  per month. This is because the amount \$ $y$  per year in the first  $N$  years covers the rest of the benefit, which is \$ $x$  per month for the rest of the individual’s life. This part can be treated as a deferred annuity. The interest rate charged each year on the loan account is fixed at the start of the contract, which is 5.5% p.a (the current conventional mortgage rate in China is around 5%). compounded monthly. Only individuals aged 60 to 85 are eligible to enter the contract.

The other stream of the product includes a death benefit. For this stream of the product, the deferred annuity component of the contract carries a ‘Cash Value’ such that when the contract is complete, the heirs of the household are eligible to receive the ‘Cash Value’ as a bequest. Therefore, the deferred annuity annual premium will be higher than the product without death

benefit. In addition to the annual administrative fee and the one-off notary fee, a transaction fee and lawyer fee will be charged to the loan account. Table 5.5 illustrates the benefit received and the deferred annuity premium (in terms of RMB) paid by a male with starting age of 60 to 85 per RMB 1,000,000 housing assets.

**Figure B.1:** Illustrative example of the Happy Life Insurance reverse mortgage for a male aged 60



**Table B.1:** Illustrative example of the Happy Life Insurance reverse mortgage for a male aged 60-85 to enter the contract comparing 'with death benefit' and 'without death benefit'.

Age	Without death benefit		With death benefit		Deferred annuity premium paying period
	Deferred annuity annual premium	Benefit per month	Deferred annuity annual premium	Benefit per month	
60	2,544	2,514	7,107	2,124	26
61	2,850	2,624	7,830	2,199	25
62	2,587	2,646	7,616	2,217	25
63	2,911	2,766	8,409	2,296	24
64	3,285	2,894	9,302	2,380	23
65	3,719	3,031	10,312	2,468	22
66	4,226	3,177	11,457	2,560	21
67	4,822	3,334	12,761	2,656	20
68	4,384	3,372	12,412	2,686	20
69	5,034	3,546	13,891	2,790	19
70	5,810	3,734	15,595	2,898	18
71	6,740	3,938	17,572	3,013	17
72	6,128	3,990	17,088	3,054	17
73	7,173	4,219	19,348	3,180	16
74	8,453	4,470	22,006	3,312	15
75	10,036	4,744	25,159	3,453	14
76	9,145	4,821	24,472	3,512	14
77	10,992	5,135	28,174	3,668	13
78	13,343	5,484	32,660	3,834	12
79	12,168	5,584	31,754	3,911	12
80	15,009	5,989	37,155	4,098	11
81	13,651	6,105	36,064	4,191	11
82	16,204	6,216	40,298	4,158	10
83	14,707	6,344	39,042	4,266	10
84	18,672	6,795	46,245	4,441	9
85	24,667	7,463	56,710	4,727	8

## B.2 Variable definitions

Variable	Definition
<i>Long-term care insurance demand</i>	
Wealth allocated to long-term care insurance	A numerical variable that ranges between 0 and 1, the percentage of total wealth allocated to the long-term care insurance premium
Preferred scenario Product S/ Products S and R/ Products S and H	Indicator variable that equals one if the participant prefers the scenario in which only Product S is available/Products S and R are available/Product S and H are available and zero otherwise.
<i>Economic factors</i>	
Household savings	Indicator variable that equals one if the participant reports household savings excluding all properties (including saving accounts, term deposits, government bonds, stocks, shares in investment fund) above the sample median, and zero otherwise.
Household debt	Indicator variable that equals one if the participant reports household debt excluding all mortgages (including for example money borrowed from relatives, friends, or using credit cards, and bank loans other than mortgages above the sample median, and zero otherwise.
Household income	Indicator variable that equals one if the participant reports a household income (including bonuses and pension income) in the last year after paying tax and social security contribution above the sample median, and zero otherwise.
Social insurance	Indicator variable that equals one if the participant has social insurance, and zero otherwise
Property value	Indicator variable that equals one if the participant reports a property value (in RMB 1,000,000) above the sample median, and zero otherwise.
Mortgage amount	Indicator variable that equals one if the participant has a mortgage amount greater than the sample median, and zero otherwise.
<i>Demographic factors</i>	
Age	A polychotomous variable that equals one if the participant is 45-49 years and rising by one in five-year steps.
Retired	Indicator variable that equals one if the participant is retired, and zero otherwise.
Female	Indicator variable that equals one if the participant is female, and zero for male.
Married	Indicator variable that equals one if the participant is married (including living in a long-term partnership), and zero otherwise.
1+ child	Indicator variable that equals one if the participant has at least one child, and zero otherwise.
Daughter	Indicator variable that equals one if the participant has at least one daughter, and zero otherwise.
Child same household	Indicator variable that equals one if the participant has a child living in the same household, and zero otherwise.
College above	Indicator variable that equals one if the highest level of education attained by the participant is a college degree or above, and zero otherwise.
Tier 1 city	Indicator variable that equals one if the participant lives in a Tier I city, and zero otherwise.
<i>Health</i>	



Health	Indicator variable that equals one if the participant's self-rated health status on a five-point scale (1 = excellent ... 5 = poor, coded reversely) is above the sample median, and zero otherwise.
Subjective life expectancy	Indicator variable that equals one if the participant's subjective life expectancy is above the sample median, and zero otherwise.
Smoker	Indicator variable that equals one if the participant is a current smoker, and zero otherwise
<i>Personality and expectations</i>	
Financial literacy and numeracy	Indicator variable that equals one if the participant's financial literacy and numeracy score based on six questions are each above the sample median, and zero otherwise.
Awareness of financial products	Indicator variable that equals one if the number of the thirteen listed financial products that the participant had heard of is above the sample median, and zero otherwise.
Awareness of long-term care insurance	Indicator variable that equals one if the participant had heard of long-term care insurance before participating in the survey, and zero otherwise.
Awareness of RM	Indicator variable that equals one if the participant had heard of reverse mortgages before participating in the survey, and zero otherwise.
House price expectation	Indicator variable that equals one if the participant expects the value of the property to increase a lot (more than 20%) or increase moderately (5%-20%), and zero otherwise.
Trust in banks	Indicator variable that equals one if the participant's rating of the statement "Banks can generally be trusted" on an eleven-point scale (0 = Totally disagree... 10 = Totally agree) is above the sample median, and zero otherwise.
Trust in insurer	Indicator variable that equals one if the participant's rating of the statement "Insurance companies can generally be trusted." on an eleven-point scale (0 = Totally disagree... 10 = Totally agree) is above the sample median, and zero otherwise.
Thought of long-term care	Indicator variable that equals one if the participant has thought about how to pay for long-term care expenses before participating in the survey, and zero otherwise
Intended bequest	Indicator variable that equals one if the participant's rating of the statement "I would like to leave an inheritance." on an eleven-point scale (1 = Certainly not ... 10 = Certainly yes) is above the sample median, and zero otherwise.
<i>Product and survey understanding</i>	
Subjective product understanding	Indicator variable that equals one if the participant's self-rated product understanding in Tasks 1, 2, and 3 are all above the sample median, and zero otherwise.
Product quiz	Indicator variable that equals one if the participant's number of correct answers to the product quiz questions is above the sample median, and zero otherwise
Survey clarity	Indicator variable that equals one if the participant's rating of the survey's clarity on a six-point scale (1 = completely clear ... 6 = completely confusing, coded reversely) is above the sample median, and zero otherwise.
Passed IMC	Indicator variable that equals one if the participant answered the instructional manipulation check correctly, and zero otherwise.
Survey time	Indicator variable that equals one if the time taken by the participant to complete the survey was above the sample median, and zero otherwise.
<i>Treatments</i>	
Product R first	Indicator variable that equals one if the participant saw Product R before Product H, and zero otherwise.
High premium in example	Indicator variable that equals one if the participant saw the example with higher premiums

### *B.3 Pricing of the long-term care insurance products*

#### *B.3.1 CLHLS and CHARLS data*

We use data from the Chinese Longitudinal Healthy Longevity Survey (CLHLS) and the China Health and Retirement Longitudinal Study (CHARLS) to estimate the health transition model. CLHLS and CHARLS contain detailed information on health status, socioeconomic characteristics, family structure, and other demographic covariates of the elderly in different areas of China.

CLHLS is conducted by the Center for Healthy Aging and Family Studies at the National School of Development at Peking University. The baseline survey of CLHLS was conducted in 1998 and covered 22 provinces in China. The data were collected from face-to-face home-based interviews and physical capacity tests. The CLHLS targets the elderly aged 80 or above in the sample cities and rural areas. Follow-up surveys were conducted in 2000, 2002, 2005, 2008, 2011, 2014, and 2018, and these surveys contain replacements for deceased elderly. From 2002, CLHLS has been expanded to target a broader group of the population, including elderly aged 65 or above, and collects a large set of health, disability, demographic, family, socioeconomic, and behavioral risk factors.

CHARLS is conducted by the China Center for Economic Research at Peking University. The baseline survey of CHARLS was conducted in 2011 and 2012 and covered 28 provinces in China. The target population of these surveys is elderly aged 45 or above in the sample cities and rural areas. Follow-up surveys were conducted in 2013, 2015, and 2018.

We designed the experimental survey for this chapter in 2018-2019 and used CLHLS and CHARLS data for 2000-2015. Our sample includes individuals who are aged above 45 living in the urban area. The total sample size of the CLHLS and CHARLS is 28,354, but a lot of observations are in older ages. As the data was not collected regularly, we use the age of each individual at the beginning and the end of the period to determine the transition period. We estimate the model using one-year age groups for the age range 65-99. We group all the individuals aged 100 or above in the “100+” group and those aged below 65 will be grouped in a five-year interval, i.e., 45-49, 50-54, 55-59, and 60-64. We estimate separate models for males and females.

We use ADL limitations as the measure of health states. Six ADL items were evaluated in both CLHLS and CHARLS: bathing, dressing, eating, using the toilet, continence, and transferring in and out of bed. Individuals reported their ability to perform these activities using three

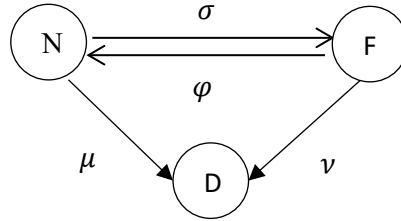
categories: do not need help, need partial help, and need full assistance. We classify an individual as being able to perform an ADL only if they do not need help. We define an individual as disabled if he/she has difficulties performing at least 3 of the ADLs. This definition is one of the triggers of benefit payments for many existing private critical illness insurance policies in China, such as the policies issued by Ping An Insurance and China Pacific Insurance.

We calculate the central exposed to risk for both healthy and disabled health states using the exact interview date, birth date, and death date. If these dates are missing, we use the 15<sup>th</sup> of the reported month. We assume that the transitions of health states happened in the mid-point between two survey waves.

### B.3.2 Generalized linear model (GLM)

Following previous actuarial research (Renshaw and Haberman, 1995; Fong *et al.*, 2015; Hanewald *et al.*, 2019), we consider a Markov process as the basis for modeling long-term care status transitions and apply generalized linear models to estimate the transition probabilities. We consider a three-state Markov process as shown in Figure 5.10. The three health states are “N” (nondisabled), “F” (functionally disabled), and “D” (dead, absorbing state).

**Figure B.2:** Three-State Markov Process.



We consider four health transitions:

- $\sigma: N \rightarrow F$ , the intensity for a healthy individual to become functionally disabled
- $\varphi: F \rightarrow N$ , the intensity for a functionally disabled individual to recover
- $\mu: N \rightarrow D$ , the mortality intensity for a healthy individual
- $\nu: F \rightarrow D$ , the mortality intensity for a functionally disabled individual

The transition probabilities are assumed to follow a time-homogenous Markov process, which is time-independent, and where the transition probabilities only depend on the current state but not the history. So, we have the following equation:

$$P_{i,j}(x, t) = \Pr(S(x + t) = j | S(x) = i). \quad (5.1)$$

Under the GLM approach, there are three components to be specified: the probability distribution, the linear predictor, and the link function.

*Probability distribution:* The transition intensities of each one-year age group are assumed to be constant in a given time interval (between two survey waves), and the number of transitions is assumed to follow a Poisson distribution. In the following, we use the mortality intensities of a healthy individual at age  $x$  as an example to show the relationships of linear predictor and link function with the intensities. Let  $n_x^{h,d}$  be the number of transitions from state  $H$  to  $D$  at age  $x$ :

$$n_x^{h,d} \sim \text{Poisson}(e_x^H \mu_x),$$

where  $e_x^H$  represents the central exposed to risk of the health state  $H$  at age  $x$ .

*Linear predictor:* Following Fong *et al.* (2015), we model the health transitions as polynomial functions of age. Therefore, the linear predictor is given by:

$$\eta_x = \beta_0 + \sum_{i=1}^n \beta_i x^i, \quad (5.2)$$

where  $x$  represents the age, and  $\beta_i$  are the coefficients to be estimated.

*Link function:* We use the log link function  $g(\cdot)$  as in Fong *et al.* (2015) and Hanewald *et al.* (2019). Following the example above, we have the following link function:

$$g(\mu_x) = \ln(\mu_x) = \eta_x. \quad (5.3)$$

## Model estimation

We use maximum likelihood estimation to estimate the parameters of the GLMs. Let  $\Phi$  be the set of parameters. The log-likelihood function is given by (using the mortality intensities of a healthy individual as an example):

$$l(\Omega) = \sum_x [n_x \ln(e_x^H \mu_x(\Phi)) - e_x^H \mu_x(\Phi)] \quad (5.4)$$

We use the Bayesian information criterion (BIC) to choose the functional form in Equation (2). We select the model with the smallest BIC value as the preferred model under the proposed GLM. Table 5.7 shows the BIC of the four nested models, while Table 5.8 shows the coefficients of the selected model.

**Table B.2:** BIC for different nested models.

	Model	$\beta_0$	$\beta_0 + \beta_1 x$	$\beta_0 + \beta_2 x^2$	$\beta_0 + \beta_1 x + \beta_2 x^2$
$\sigma$	Male	1,036.37	441.51	<b>435.69</b>	438.06
	Female	1,500.77	<b>568.46</b>	577.09	569.48
$\mu$	Male	3,835.29	546.23	644.36	<b>545.94</b>
	Female	4,577.01	531.58	727.17	<b>469.29</b>
$\gamma$	Male	314.21	296.92	301.7	<b>296.47</b>
	Female	460.75	<b>384.82</b>	388.77	389.2
$\nu$	Male	618.98	<b>399.12</b>	409.57	401.4
	Female	613.21	<b>368.96</b>	374.31	373.34

**Table B.3:** Coefficients of different nested models.

	Model	$\beta_0$	$\beta_0 + \beta_1 x$	$\beta_0 + \beta_2 x^2$	$\beta_0 + \beta_1 x + \beta_2 x^2$
$\sigma$	Male	-5.219***	--	9.414***	-5.219***
	Female	-6.231***	6.944***	--	-6.231***
$\mu$	Male	-6.555***	1.182***	3.440*	-6.555***
	Female	-9.165***	22.599***	15.165***	-9.165***
$\gamma$	Male	-1.191***	-6.826**	7.124*	-1.191***
	Female	-1.135***	3.362***	--	-1.135***
$\nu$	Male	-3.824***	5.557***	--	-3.824***
	Female	-3.843***	5.220***	--	-3.843***

After estimating the GLMs, we calculate the health state transition matrix. The following matrix is an example for a male aged  $x$ :

$$T_{male}(x, x+1) = \begin{bmatrix} p_{N,N}^{male}(x, x+1) & p_{N,F}^{male}(x, x+1) & p_{N,D}^{male}(x, x+1) \\ p_{F,N}^{male}(x, x+1) & p_{F,F}^{male}(x, x+1) & p_{F,D}^{male}(x, x+1) \\ 0 & 0 & 1 \end{bmatrix}, \quad (5.5)$$

where  $p_{y,z}^{male}(x, x+1)$  is the transition probability that the individual transitions from health state  $y$  to health state  $z$  between age  $x$  and age  $x+1$ .

### Calculation of the long-term care insurance premium

In the experimental task, all individuals are assumed to be healthy and age 60 for males or 55 for females. To calculate the transition probabilities to age  $60+a$  of a healthy male aged 60, we use the following matrix multiplication:

$$\begin{aligned} & [p_{h,h}^{male}(60, 60+a) \quad p_{h,f}^{male}(60, 60+a) \quad p_{h,d}^{male}(60, 60+a)] \\ & = [1 \quad 0 \quad 0] \times \prod_{i=1}^a T_{male}(60+i-1, 60+i). \end{aligned} \quad (5.6)$$

Each entry of the resulting array is the probability of the transition from healthy to the corresponding health state at age  $60+a$  of a healthy male aged 60. Assuming a limiting age

of 100, we can use the above formula to obtain the transition probabilities to age 61 up to 100 by varying  $a$  from 1 to 40.

The long-term care insurance premium is given by the total expected present value of the benefit, which is the income when the individual becomes disabled. The formula for males is

$$E[\text{LTCI}^{\text{male}}] = \sum_{t=1}^{40} E[\text{benefit}_t^{\text{male}}] \times DF_t, \quad (5.7)$$

where  $DF_t$  is the discount factor for the cash flow in  $t$  years' time. The long-term care insurance premium for females is calculated using the same methodology.

The long-term care insurance premium for a couple is given by:

$$E[\text{LTCI}^{\text{total}}] = E[\text{LTCI}^{\text{male}}] + E[\text{LTCI}^{\text{female}}]. \quad (5.8)$$

We assume a profit loading of 20% so that the final long-term care insurance premium is 1.2 times the expected present value.

### B.3.3 Reverse mortgage

The initial loan of the reverse mortgage component is the price of long-term care insurance. We allow for a maximum loan-to-value ratio at the start of the contract of 40%. In the reverse mortgage pilot program in China, the interest rate charged is 5.5% p.a. plus annual management and policy fees. To simplify the fee structure, we assume no additional fees but instead assume a higher interest rate to capture the fees. We estimate that for an initial loan of RMB 1 million, for a male aged 60 entered into the pilot reverse mortgage agreement, with a life expectancy of 30 years, the management fee is around 0.3% p.a. Therefore, we use an interest rate of 5.8% p.a. for the reverse mortgage loan.

### B.3.4 Home reversion plan

Assuming a similar product design as in Alai *et al.* (2014), the home reversion contract involves selling a proportion  $\kappa$  of home equity to the contract provider to finance the long-term care insurance premium. A lease-for-life is embedded in the contract, which reflects the rent on the proportion of the home sold. Therefore, the sale proceeds consist of two components, the lease-for-life agreement and the amount that can be used to finance the long-term care insurance premium, so the following relationship holds:

$$\kappa H_0 = LL + \text{amount can be used for LTC insurance}, \quad (5.9)$$

where  $H_0$  is the current house price, and  $LL$  is the value of the lease-for-life agreement.

Let the rental yield be the constant  $RY$ . In each period, the value of the lease-for-life agreement would increase if they remain in the property. Assume the house price growth rate is  $g$  each year. Then, the EPV of the lease-for-life agreement is:

$$LL = \kappa H_0 \times \sum_{t=1}^{\omega-55} D_t \times RY \times (1+g)^t \times \Pr(\text{stay in the home}_t), \quad (5.10)$$

where  $\omega$  is the limiting age, which is 100.  $\Pr(\text{stay in the home}_t)$  is the probability that the couple will stay in the property for  $t$  years, which we calculate as:

$$\begin{aligned} \Pr(\text{stay in the home}_t) &= 1 - \Pr(\text{moving out}_t) \\ &= 1 - p_{h,f}^{male}(60,60+t) \times (p_{h,f}^{female}(55,55+t) + p_{h,d}^{female}(55,55+t)) \\ &\quad - p_{h,d}^{male}(60,60+t) \times (p_{h,f}^{female}(55,55+t) + p_{h,d}^{female}(55,55+t)). \end{aligned} \quad (5.11)$$

First, we compute the probability of the couple moving out of the property. The couple will need to move out of the property only when both are functionally disabled, one of them is dead and the other one is functionally disabled, or both are dead. As the sum of the probabilities of staying in the property and moving out of the property equals one, by rearranging the equation, the probability of staying in the property can be obtained. Therefore, to pay RMB 1 of long-term care insurance premium, the proportion of the property to sell is:

$$\kappa = \frac{1}{H_0 \times (1 - \sum_{t=1}^{\omega} D_t \times RY \times (1+g)^t \times \Pr(\text{stay in the home}_t))}. \quad (5.12)$$

### B.3.5 Data sources

Variable	Value	Note	Source
House price growth (p.a.)	5.00%	Annual house price growth in over 70 cities in China was 4.2% p.a. during 2005-2018. We round up to 5% p.a.	Residential Property Prices for China <a href="https://fred.stlouisfed.org/series/QCNN628BIS">https://fred.stlouisfed.org/series/QCNN628BIS</a> Retrieved on 20 January 2019.
Long-term care cost inflation (p.a.)	5.00%	The main cost of long-term care is the residential cost (Kalseth and Halvorsen, 2020). Therefore, we assume it has the same growth as the house price growth.	
Rental yield (p.a.)	1.80%	The rental yield of the major cities in China is around 1.8% in 2018.	Gross rental yields <a href="https://www.globalpropertyguide.com/Asia/china/Rental-Yields">https://www.globalpropertyguide.com/Asia/china/Rental-Yields</a> Retrieved on 20 January 2019.
Long-term care cost in 2018 (Tier 1 cities)/month	RMB 11,500 (USD 1,710)	Tier 1 cities are Beijing, Shanghai, Guangzhou, and Shenzhen, and other cities included in this study are Tier 2 cities.	Cost of residential nursing home per month <a href="https://www.daojia.com/jiage/bj/yanglaoyuan/">https://www.daojia.com/jiage/bj/yanglaoyuan/</a>
Long-term care cost in 2018 (Tier 2 cities)/month	RMB 9,500 (USD 1,410)	The cost is calculated from the average of each Tier.	Retrieved on 12 <sup>th</sup> January 2019.
Discount rate (p.a.)	3.50%	Current inter-bank rates	<a href="https://tradingeconomics.com/china/interbank-rate">https://tradingeconomics.com/china/interbank-rate</a>

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