Is There a Demand for Reverse Mortgages in China? Evidence from Two Online Surveys

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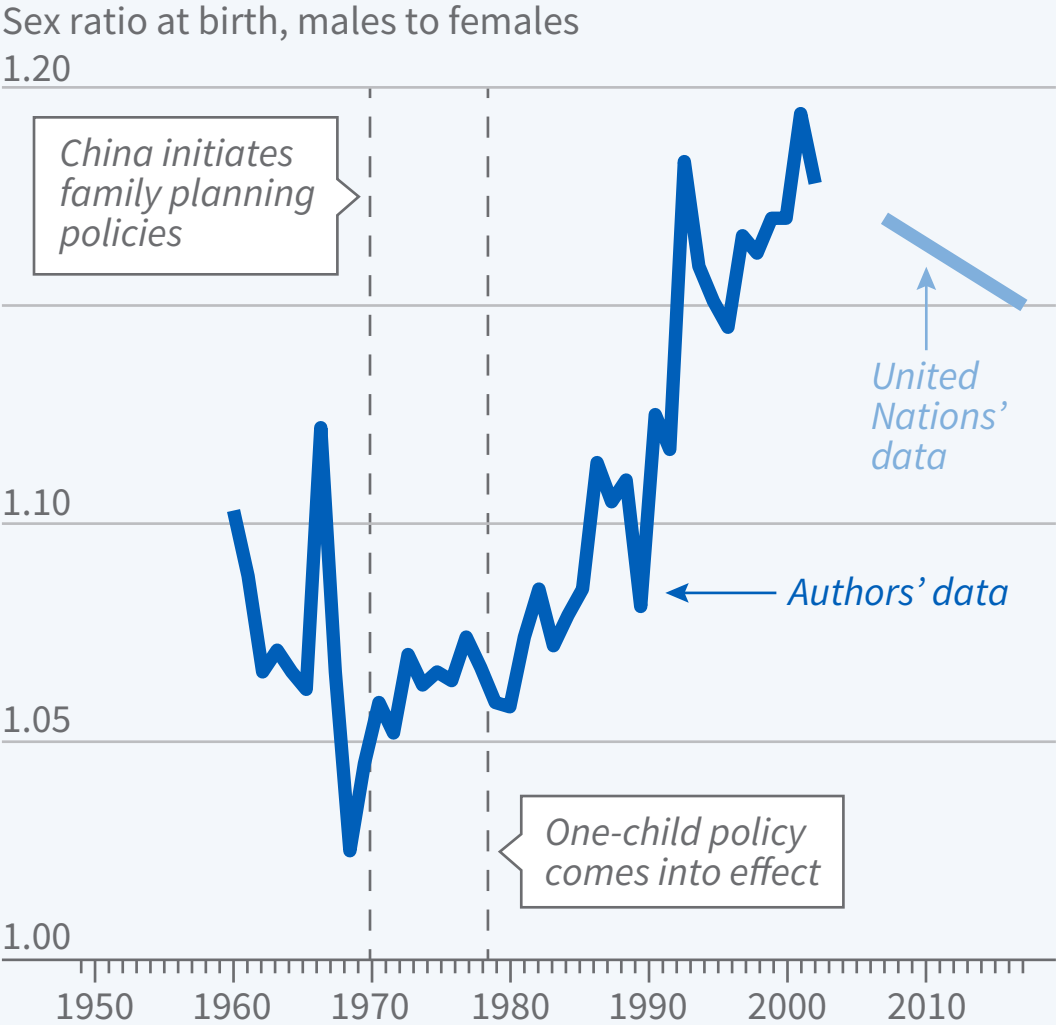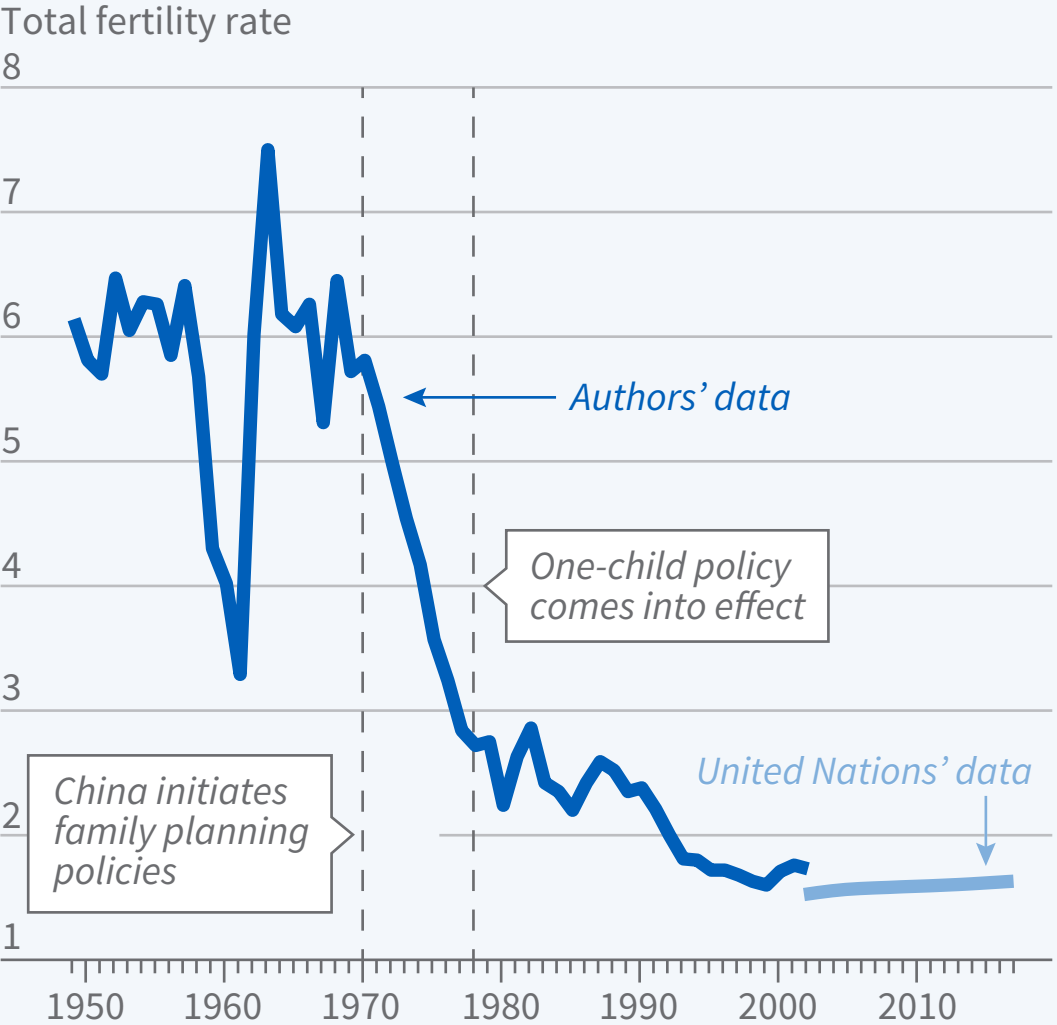Shang Wu (First State Super, CEPAR)

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Population Aging

- Among the many challenges facing the Chinese economy, population aging is no doubt one of the most important.
  - The old-age dependency ratio in China increased from 10 percent in 2000 to 13 percent in 2015, and is expected to increase to 44 percent by 2050.
- Both increasing life expectancy and declining fertility contributed to China's rapid population aging.
  - Family planning policies, including but not restricted to the one-child policy, have led to a rapid decline in total fertility, from 5.7 in 1969 to 2.7 in 1978, when the one-child policy started, to about 1.6 currently.
  - According to World Bank data, the average life expectancy at birth in China has steadily increased from 57.6 years in 1969 to 65.9 in 1978 to 76.4 in 2017.

China's Fertility Rate and Sex Ratio at Birth, 1949–2002

Total fertility rate

Authors' data

One-child policy comes into effect

China initiates family planning policies

United Nations' data

1950 · 1960 · 1970 · 1980 · 1990 · 2000 · 2010

Sex ratio at birth, males to females

China initiates family planning policies

United Nations' data

Authors' data

One-child policy comes into effect

1950 · 1960 · 1970 · 1980 · 1990 · 2000 · 2010

Source: Y. Chen and H. Fang, NBER Working Paper No. 25041 and the United Nations

China's Old-Age Dependency Ratio

Ratio of population aged 65+
per 100 people aged 15–64

50%

40

30

20

10

0
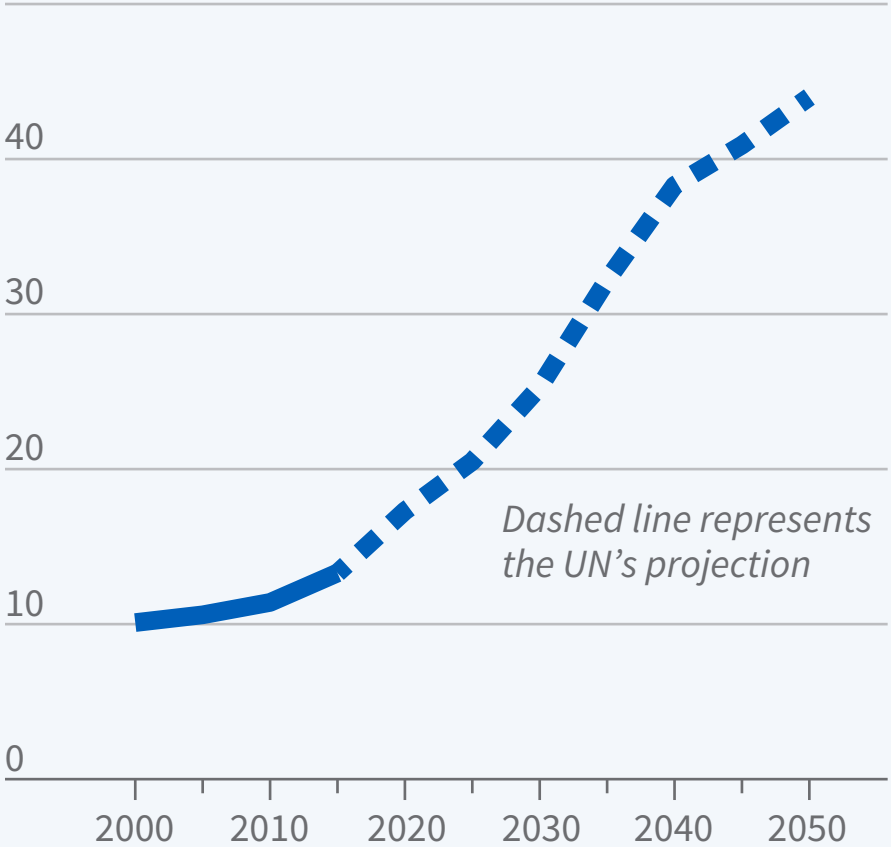
*Dashed line represents
the UN's projection*

2000   2010   2020   2030   2040   2050

*Data does not include Hong Kong, Macao,
or Special Administrative Regions of China*
Source: The United Nations

Institutional Background: Mid-1980s to 1994

- To reform (and to a large extent privatize) the state-owned enterprises in the mid-1980s, it was considered necessary to introduce an alternative housing system that would de-link home allocation from employment.
- An important milestone occurred in 1988 when the Chinese constitution was amended to allow for land transactions, which set the legal stage for the privatization of housing in China.
- Comprehensive housing reform was initiated in 1994 when employees in the state sector were allowed to purchase full or partial property rights to their current apartment units at subsidized prices.
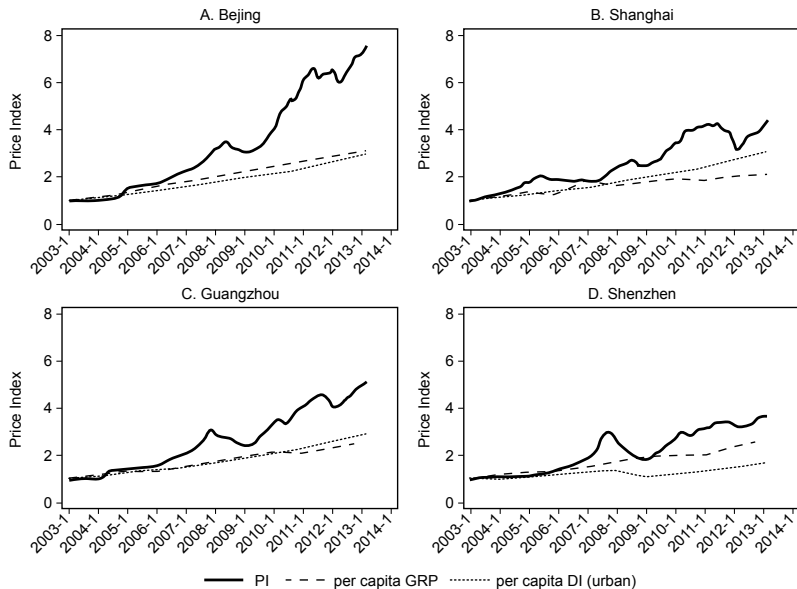
Institutional Background: 1998 - Current

- Nascent markets for homes, known as "commodity houses," emerged in some large cities in early 1990s;

- They grew rapidly only after 1998 when the central government completely abolished the traditional model of housing allocation as an in-kind benefit and privatized housing properties of all urban residents.

- Also in 1998, partly as a response to the adverse effects of the 1997 Asian Financial Crisis, the Chinese government established the real estate sector as a new engine of economic growth.

- As an important impetus to the development of private housing markets, China's central bank, the People's Bank of China (PBC), outlined the procedures for home buyers to obtain residential mortgages at subsidized interest rates in 1998.

- Moreover, between 1998 and 2002, the PBC lowered the mortgage interest rate five times to encourage home purchases.
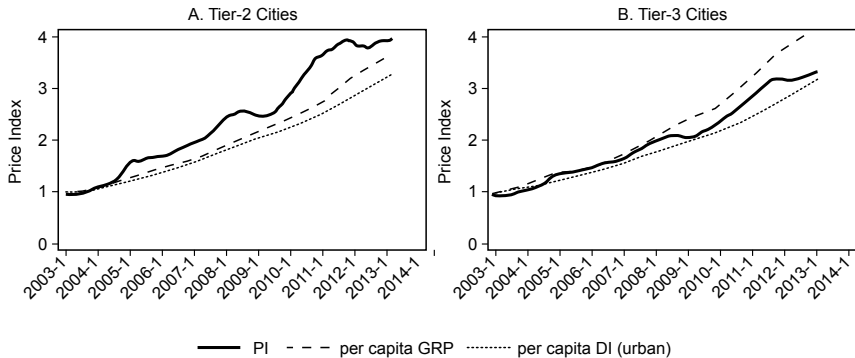
Institutional Background: 1998 - Current

- By 2005, China had become the largest residential mortgage market in Asia. According to a PBC report published in 2013, financial institutions made a total of 8.1 trillion RMB in mortgage loans in 2012, accounting for 16 percent of all bank loans in that year.
- At the same time, the PBC also developed policies to encourage housing development, including broadening the scope of development loans and allowing pre-sales by developers.

Housing Price Index in Fang et al (2016): First Tier Cities

A. Bejing — B. Shanghai — C. Guangzhou — D. Shenzhen

PI — — — per capita GRP ········· per capita DI (urban)

Housing Price Index in Fang et al (2016): Second and Third Tier Cities

A. Tier-2 Cities — B. Tier-3 Cities

PI — — — per capita GRP ·········· per capita DI (urban)

Home Ownership Rates: China Households Finance Survey

Overall	Rural/Urban		Regions		
	Urban	Rural	East	Central	West
89.68	85.39	92.60	87.35	94.42	90.41

Table: Home Ownership Rates in China, 2011: Gan et al. Chinese Household Finance Survey

- International home ownership rate:
    - World average: 63%
    - United States: 65%
    - Japan: 60%

Multiple Home Ownership Rates: CHFS

Overall	Rural/Urban		Regions		
	Urban	Rural	East	Central	West
1	69.05	80.42	71.31	80.27	84.27
2	15.44	12.20	15.08	14.03	8.03
3+	3.63	2.10	4.12	1.16	0.80

Table: Multiple Home Ownership Rates in China, 2011: Gan et al. Chinese Household Finance Survey

Capital Gains from Home Purchases (RMB)

	First Apt		Second Apt		Third Apt	
	Mean	Median	Mean	Median	Mean	Median
Historical Cost	191K	68K	393K	275K	620K	470K
Current Value	841K	300K	957K	570K	1220K	820K
% Nominal Gain	340%	344%	143%	107%	97%	75%

Table: Nominal Capital Gains from Homes in China, 2011: Gan et al. Chinese Household Finance Survey

Housing Assets as a Fraction of Household Wealth: Chinese Household Panel Survey

Assets	All China	Urban China	Rural China
Land Assets	7.7	2.7	20.4
Housing Assets	73.9	78.7	60.9
Financial Assets	10.6	11.1	9.5
Fixed Assets for Production	8.5	7.7	11.0
Durable Goods	5.6	5.6	5.6
Housing Debts	-2.3	-2.5	-1.7
Non-housing Debts	-3.9	-3.2	-5.7

Table: Composition of Household Wealth Portfolios, Urban, Rural and all China in 2012 (Units: %)
Source: Xie and Jin, Household Wealth in China

Motivation

- Rapid population ageing in China: increasing funding needs, pressure on social security systems

- Reverse mortgage pilot program in China

- Reverse mortgages:
  - Allow older homeowners to liquidate and consume home equity without relocating
  - Provide retirement income
  - Finance health/aged care costs
  - Allow bring forward of bequests

Evidence of a reverse mortgage puzzle

- Lifecycle models suggest large utility gains from reverse mortgages (*Davidoff 2009, Hanewald et al 2016, Nakajima & Telyukova 2017*)

    ………….. but low observed demand

- Explanations:

    – Bequest motives (*Elsinga et al 2010*)

    – Debt aversion (*Fornero et al 2016, Jefferson et al 2017, Dillingh et al 2017*)

    – Breakdown of intergenerational reciprocal arrangements (*Jefferson et al 2017*)

    – Financial illiteracy and poor product knowledge (*Davidoff et al 2017*)

    – High costs → adverse selection/moral hazard (*Fornero et al 2016*)

Reverse Mortgage pilot in China – 194 contracts since 2014

- 'House for pension' program by Happy Life Insurance since July 2014

- Initially Beijing, Shanghai, Guangzhou and Wuhan (extended in 2016)

- Product features:
  - Fixed monthly income for life (linked with deferred annuity)
  - Fixed interest rate of 5.5%, no negative equity guarantee
  - Optional death benefit
  - Eligibility: ages 60-85

- Why lack of interest?
  - Children disapprove parents mortgaging homes in return for monthly pension
  - Concerns about legal/regulatory issues, residential property price fluctuations, high mortgage interest rates
  - Perception of product complexity

Our aims & contribution

- Elicit 'interest' in reverse mortgages in China
  - Older homeowners vs. adult children
  - Impact of alternative information frames for the use of payments

- Analyze preferred use of payments

- Develop product design and presentation format that facilitate both product understanding and product acceptance

Survey design

Two online surveys conducted in October 2017 (dataSpring)
- Survey 1: urban homeowners aged 45-69 (n=1,100)
- Survey 2: urban adult children of urban homeowners aged 20-49 (n=1,100)

Survey structure
1. Screening questions
2. Survey task
   - Reverse mortgage product description + numerical example
   - 4 information frames for potential use of reverse mortgage payments
   - Questions on '**interest in product**', '**use of payments**'
   - Product knowledge quiz
3. Covariate collection
   - Demographics, income, wealth, financial competence (financial literacy, numeracy), bequest motive, financial risk attitudes, personality traits, expectations of and preferences for aged care

Reverse mortgage product description

- Product design addresses deficiencies in existing (Happy Life) product + informed by focus groups in Beijing → *interest rate, buy-back, renting out, valuation, government guarantee, etc.*

- More detailed description than previous studies (*Davidoff et al 2017, Fornero et al 2016, Dillingh at al 2017*), includes worked example

"*Product ABC allows retired homeowners to use their home as a collateral to receive cash payments, while **allowing them to still own and live in the property**. Product ABC is offered by a large state-owned Chinese bank, with **a guarantee from the government** for the payments.*

This product has the following characteristics:
At the beginning of the contract:

- *You can **choose how much** and **how** you will be paid. You can choose between a lump sum, lifetime fixed regular payments or flexible payments depending on your needs.*

- *...*

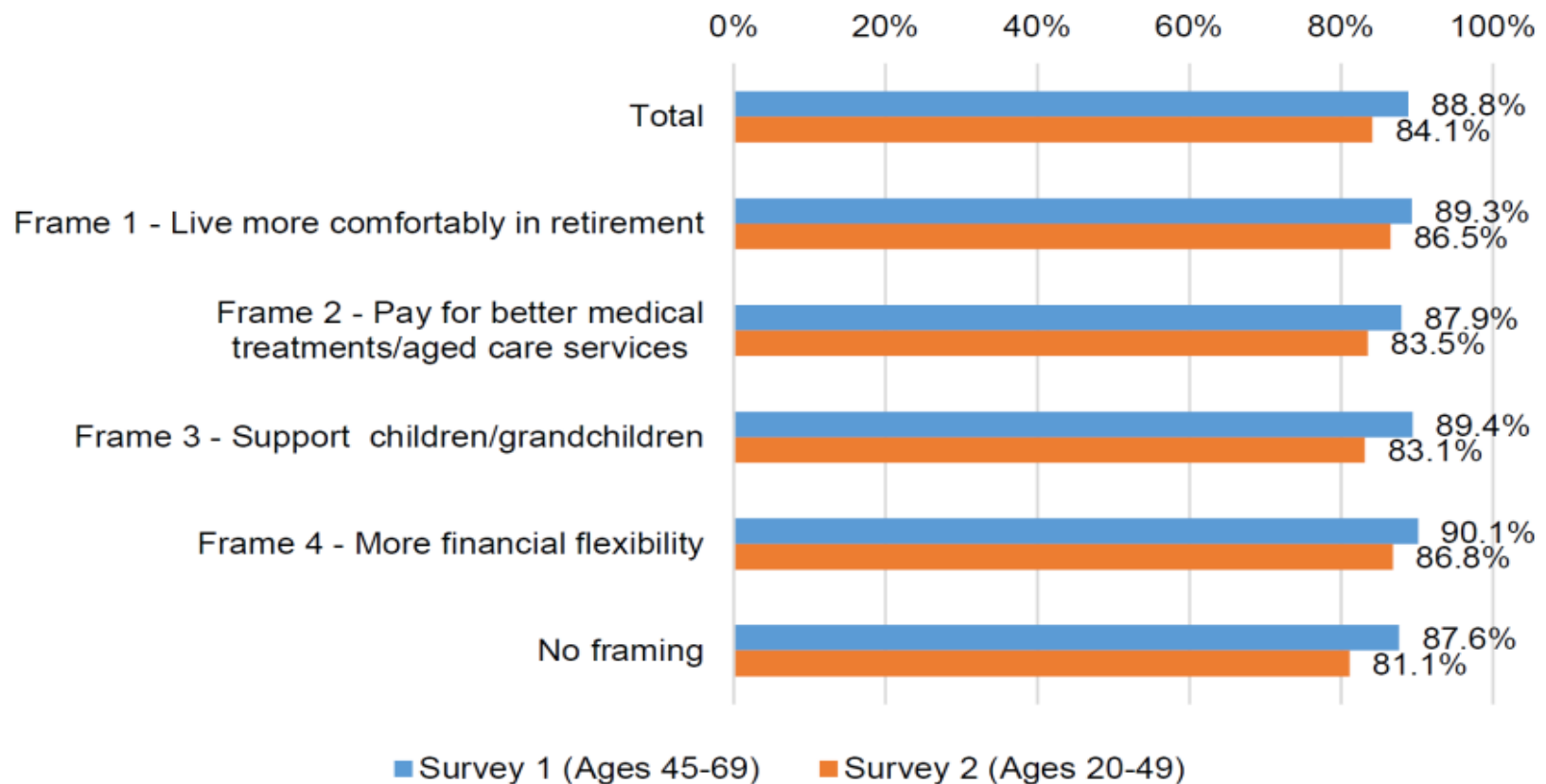# Four information frames for potential use of reverse mortgage payments

"Retired homeowners can use the payments from ABC product, for example, but not limited to, to ...

- *Live more comfortably in retirement, to afford (more) assistance with housekeeping, or to afford extras like a new car, travel or better furniture."* (Frame 1)

- *Pay for better medical treatments and/or better aged care services, including home care."* (Frame 2)

- *Support their children and/or grandchildren to pay for their education, pay for their wedding, help them buy a property or provide extra income for everyday expenses."* (Frame 3)

- *Have more flexibility to pay for any expenses in retirement."* (Frame 4)

- No framing (Frame 5)

Interest in reverse mortgages – high in all frames

Survey 1 (Ages 45-69): Would you be interested in such a product if it was available? *(Y/N)*

Survey 2 (Ages 20-49): Would you recommend this product to your parents if it was available? *(Y/N)*

Interest in reverse mortgages – high in all frames

Survey 1 (Ages 45-69): Would you be interested in such a product if it was available? *(Y/N)*
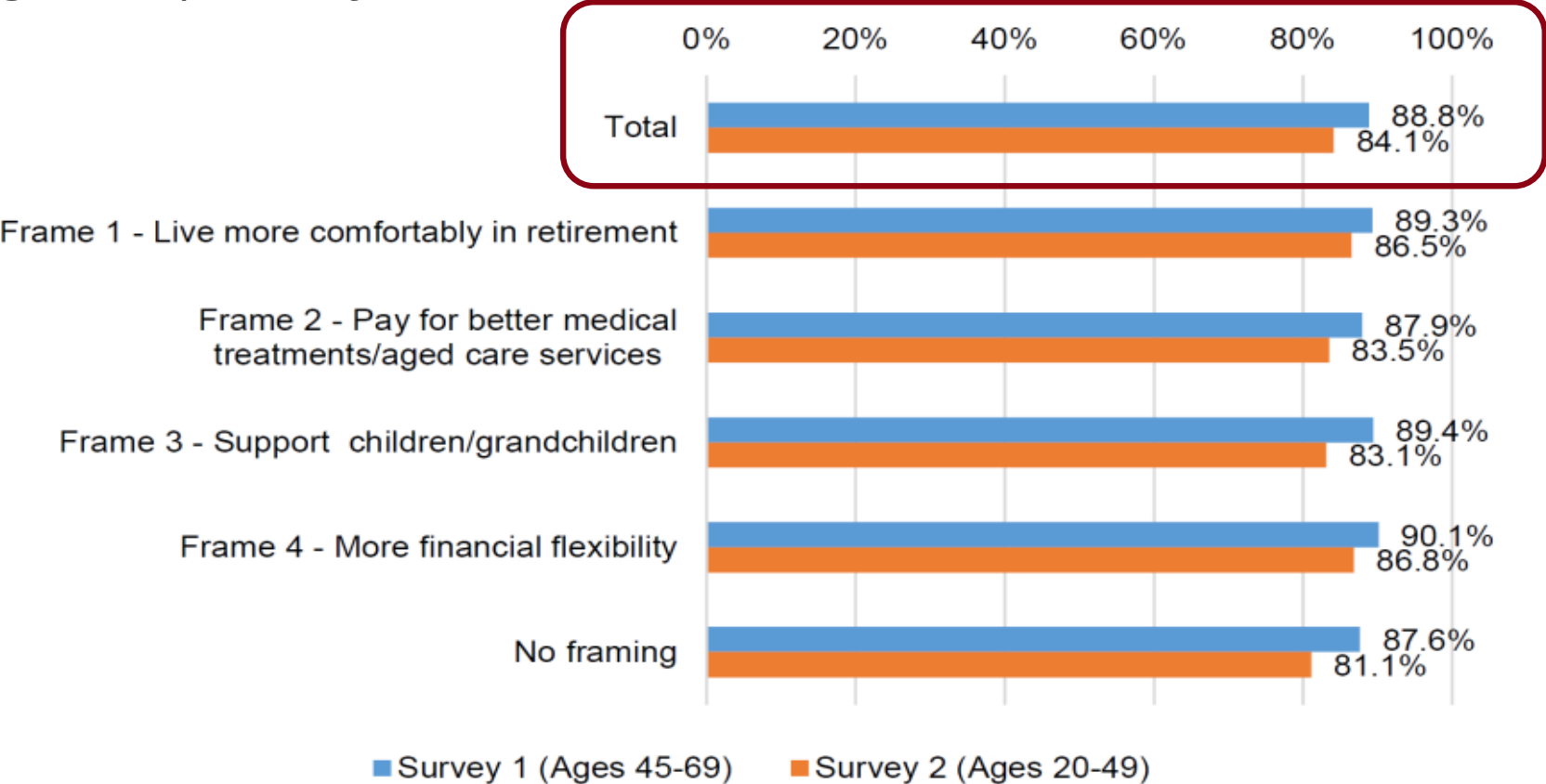
Survey 2 (Ages 20-49): Would you recommend this product to your parents if it was available? *(Y/N)*

Bar chart comparing Survey 1 (Ages 45-69) and Survey 2 (Ages 20-49):

Category	Survey 1 (Ages 45-69)	Survey 2 (Ages 20-49)
Total	88.8%	84.1%
Frame 1 - Live more comfortably in retirement	89.3%	86.5%
Frame 2 - Pay for better medical treatments/aged care services	87.9%	83.5%
Frame 3 - Support children/grandchildren	89.4%	83.1%
Frame 4 - More financial flexibility	90.1%	86.8%
No framing	87.6%	81.1%

What explains interest in reverse mortgages?

	Parents sample (Age 45-69)	Adult children sample (Age 20-49)
Use of payment frames	-	-
RM product familiarity	+ve *	+ve ***
RM product understanding	+ve **	+ve [+]
Financial literacy	+ve *	-ve *
Numeracy	+ve [+]	-
Education (uni degree)	+ve **	+ve [+]
Financial risk tolerance	+ve ***	+ve ***
Female	+ve **	-
One or more children	-	+ve **
Grandchildren	+ve *	NA
Prefer formal aged care at home	+ve **	NA
Intended bequest	-ve *	NA
Siblings	NA	+ve ***
Parents intended bequest	NA	+ve *

21

What explains interest in reverse mortgages?

	Parents sample (Age 45-69)	Adult children sample (Age 20-49)
Use of payment frames	-	-
RM product familiarity	+ve *	+ve ***
RM product understanding	+ve **	+ve +
Financial literacy	+ve *	-ve *
Numeracy	+ve +	-
Education (uni degree)	+ve **	+ve +
Financial risk tolerance	+ve ***	+ve ***
Female	+ve **	-
One or more children	-	+ve **
Grandchildren	+ve *	NA
Prefer formal aged care at home	+ve **	NA
Intended bequest	-ve *	NA
Siblings	NA	+ve ***
Parents intended bequest	NA	+ve *

22

What explains interest in reverse mortgages?

	Parents sample (Age 45-69)	Adult children sample (Age 20-49)
Use of payment frames	-	-
RM product familiarity	+ve *	+ve ***
RM product understanding	+ve **	+ve +
Financial literacy	+ve *	-ve *
Numeracy	+ve +	-
Education (uni degree)	+ve **	+ve +
Financial risk tolerance	+ve ***	+ve ***
Female	+ve **	-
One or more children	-	+ve **
Grandchildren	+ve *	NA
Prefer formal aged care at home	+ve **	NA
Intended bequest	-ve *	NA
Siblings	NA	+ve ***
Parents intended bequest	NA	+ve *

23

What explains interest in reverse mortgages?

	Parents sample (Age 45-69)	Adult children sample (Age 20-49)
Use of payment frames	-	-
RM product familiarity	+ve *	+ve ***
RM product understanding	+ve **	+ve +
Financial literacy	+ve *	-ve *
Numeracy	+ve +	-
Education (uni degree)	+ve **	+ve +
Financial risk tolerance	+ve ***	+ve ***
Female	+ve **	-
One or more children	-	+ve **
Grandchildren	+ve *	NA
Prefer formal aged care at home	+ve **	NA
Intended bequest	-ve *	NA
Siblings	NA	+ve ***
Parents intended bequest	NA	+ve *

24

What explains interest in reverse mortgages?

	Parents sample (Age 45-69)	Adult children sample (Age 20-49)
Use of payment frames	-	-
RM product familiarity	+ve *	+ve ***
RM product understanding	+ve **	+ve +
Financial literacy	+ve *	-ve *
Numeracy	+ve +	-
Education (uni degree)	+ve **	+ve +
Financial risk tolerance	+ve ***	+ve ***
Female	+ve **	-
One or more children	-	+ve **
Grandchildren	+ve *	NA
Prefer formal aged care at home	+ve **	NA
Intended bequest	-ve *	NA
Siblings	NA	+ve ***
Parents intended bequest	NA	+ve *

25

What explains interest in reverse mortgages?

	Parents sample (Age 45-69)	Adult children sample (Age 20-49)
Use of payment frames	-	-
RM product familiarity	+ve *	+ve ***
RM product understanding	+ve **	+ve +
Financial literacy	+ve *	-ve *
Numeracy	+ve +	-
Education (uni degree)	+ve **	+ve +
Financial risk tolerance	+ve ***	+ve ***
Female	+ve **	-
One or more children	-	+ve **
Grandchildren	+ve *	NA
Prefer formal aged care at home	+ve **	NA
Intended bequest	-ve *	NA
Siblings	NA	+ve ***
Parents intended bequest	NA	+ve *

26

What explains interest in reverse mortgages?

|	Parents sample (Age 45-69)	Adult children sample (Age 20-49)
Use of payment frames	-	-
RM product familiarity	+ve *	+ve ***
RM product understanding	+ve **	+ve +
Financial literacy	+ve *	-ve *
Numeracy	+ve +	-
Education (uni degree)	+ve **	+ve +
Financial risk tolerance	+ve ***	+ve ***
Female	+ve **	-
One or more children	-	+ve **
Grandchildren	+ve *	NA
Prefer formal aged care at home	+ve **	NA
Intended bequest	-ve *	NA
Siblings	NA	+ve ***
Parents intended bequest	NA	+ve *

27

Use of reverse mortgage payments

Survey 1 (Ages 45-69): How would you allocate the use of payments from product ABC? *Please allocate 100 points ....*

Survey 2 (Ages 20-49): How would you advise your parents to use the payments from product ABC? *Please allocate 100 points ....*

Use of reverse mortgage payments

Survey 1 (Ages 45-69): How would you allocate the use of payments from product ABC? *Please allocate 100 points ….*

**Survey 2 (Ages 20-49): How would you advise your parents to use the payments from product ABC?** *Please allocate 100 points ….*
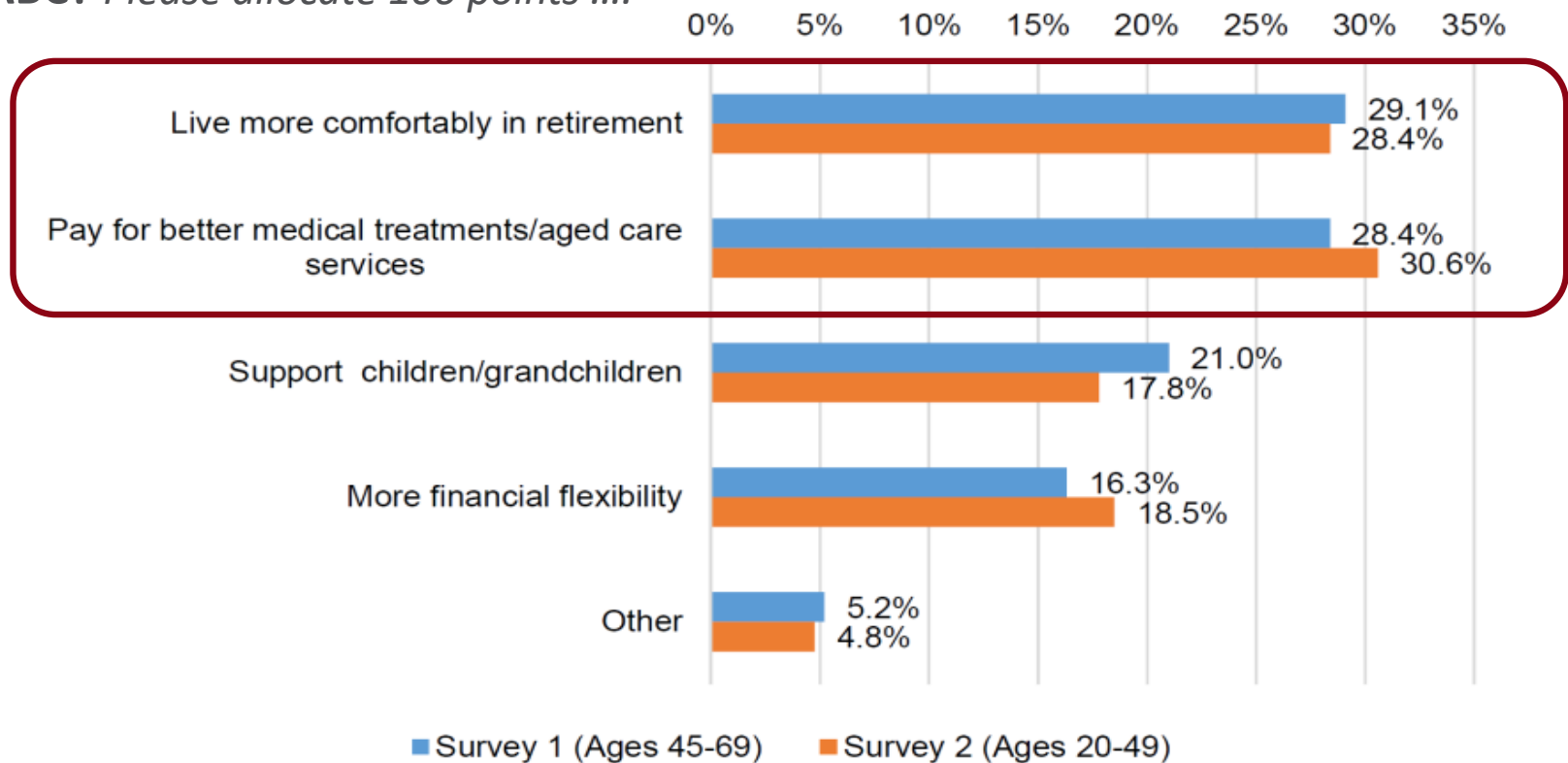
What explains use of reverse mortgage payments by urban parents (aged 45-69)

- Older, educated, low household debt, low numeracy, health status below median → use payments to '<u>live more comfortably in retirement</u>'

- Male, educated, retired, risk averse, health status below median → use payments to '<u>afford better health/aged care</u>'

- Son, adult child in same household, expect informal care, bequest intention → use payments to '<u>support children/grand children</u>'

Reasons for reverse mortgage rejection
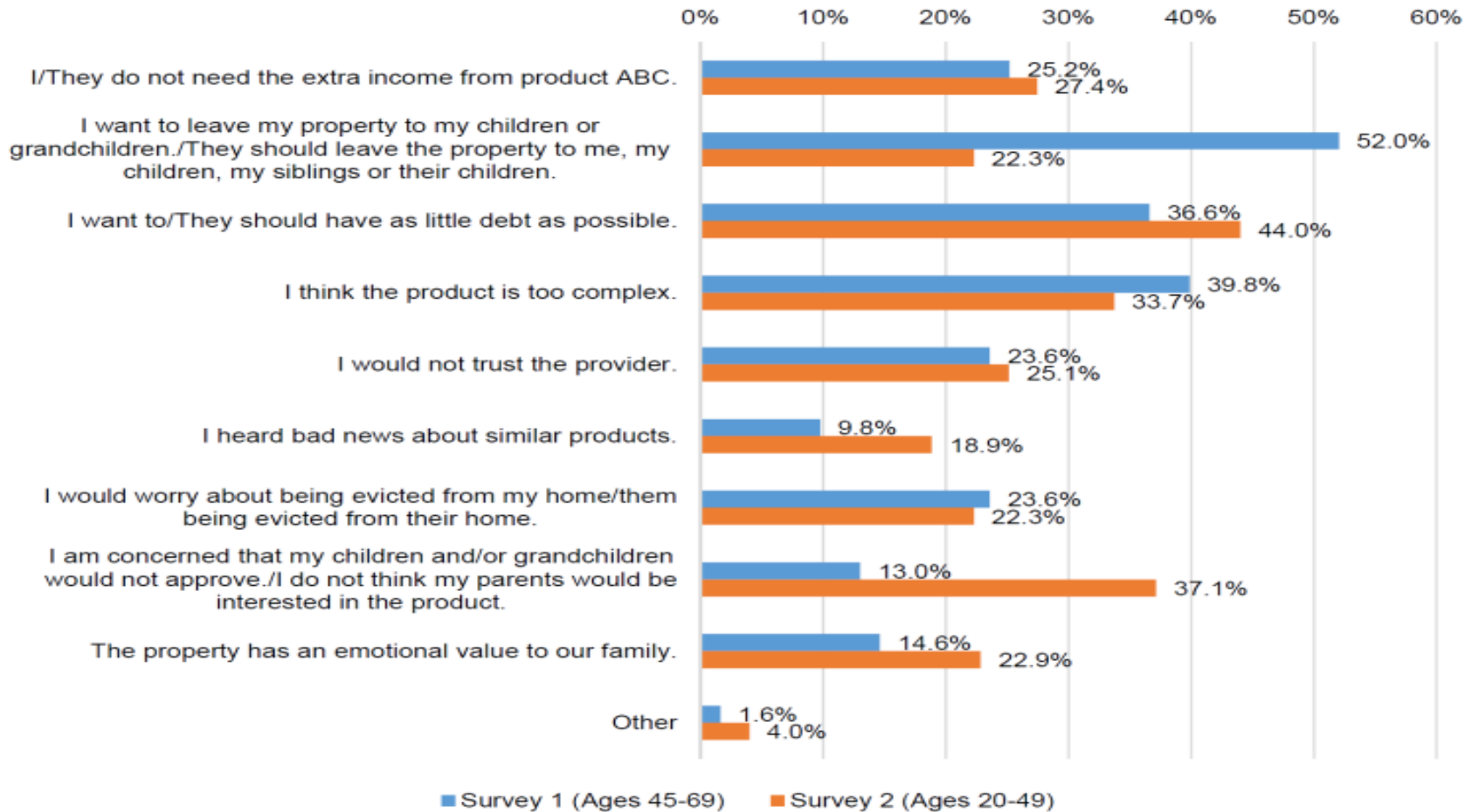
Reasons for Reverse Mortgage rejection
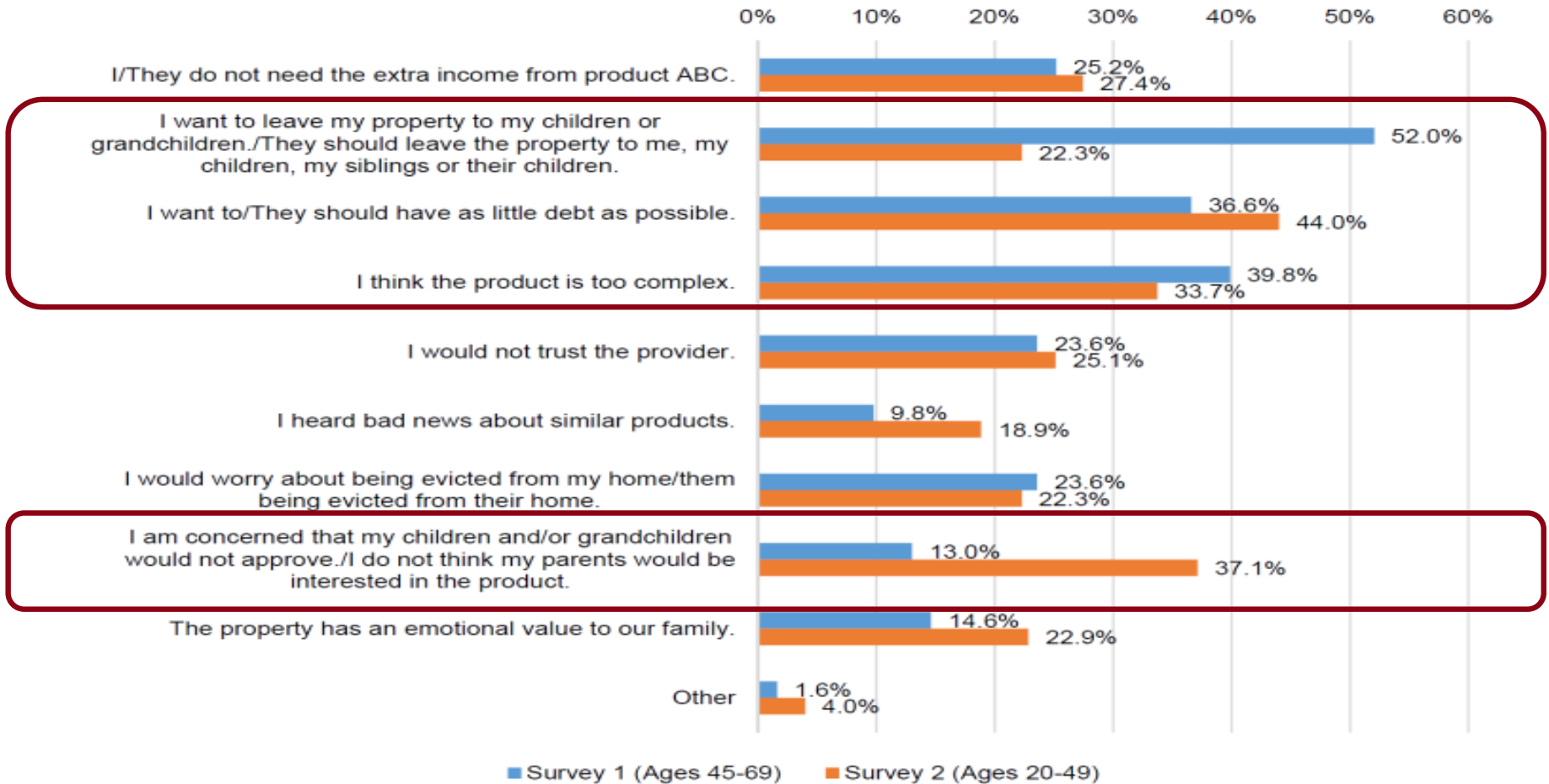
Conclusions

- Interest in reverse mortgages is high among educated urban Chinese
  - 89% urban homeowners aged 45-69 'interested'
  - 84% urban aged 20-49 would recommend to urban homeowner parents

- Preferred uses of reverse mortgage payments
  - Live more comfortably in retirement
  - Pay for better medical treatment and aged care services

- Implications
  - Clear product description key to RM acceptance
  - RM should be marketed to older residents and their adult children
  - RMs should be framed broadly, to fund a range of retirement needs