Institute for Fiscal Studies

Life expectancy and the purchase of annuities

David Sturrock

joint with Cormac O'Dea

ELSA Wave 8 Launch

18th October 2018

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

Acknowledgements

Research funded by the IFS Retirement Savings Consortium and the Economic and Social Research Council

Introduction

What do we know about individuals' expectations of their own survival at older ages?

- Use data from ELSA expectations module
- Do individuals have "well-formed" expectations about their survival?

Do survival expectations show any systematic errors?

- Average expectations differ substantially from "objective" survival probabilities

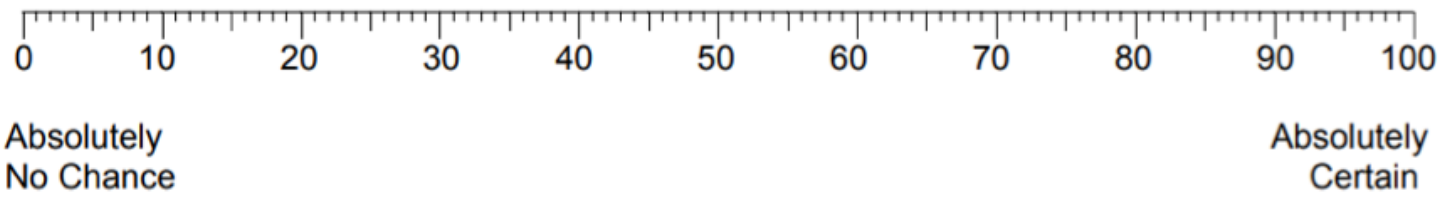
What are the implications for economic behaviour?

- Focus on annuitisation choice
- Important in context of "pension freedoms" and "annuities puzzle"

Subjective expectations in ELSA

ELSA expectations module includes a series of questions prefaced by:

"Now I have some questions about how likely you think various events might be. When I ask a question I'd like you to give me a number from 0 to 100, where 0 means that you think there is absolutely no chance an event will happen, and 100 means that you think the event is absolutely certain to happen."



Subjective expectations in ELSA

What are the chances...

Topic	Event
Work	...you will be working after age X? ...if you were in paid work it would be full time? ...health will limit your ability to work before you reach age 65?

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Social care	...you will ever move to a nursing home? ...you will ever need long term care not provided by family or friends? ...you will ever have to pay for long term care?
House prices	...the value of your home will increase/decrease by more than X% over the next year?

Subjective expectations in ELSA

"What are the chances that you will live to age X or more?"

Age of respondent	Age asked about in first question	Age asked about in second question
65 and under	75	85
66–69	80	85
70–74	85	-
75–79	90	-
80–84	95	-
85–89	100	-

Note: second question asked from wave 3 of ELSA onwards

- Survival probabilities rather than life expectancy
- Multiple questions per respondent (if <70)

Do individuals give well-formed answers to survival expectations questions?

Few individuals show signs of struggling to understand questions

- 98% of individuals give a numerical answer as requested
- Only 14% give an “impossible” answer e.g. 100% prob of 10yr survival

Three other “tests” suggest answers are reflective/considered:

1. Expectations are correlated with key mortality risk factors
   - Smoking, drinking, age that parents died etc.
2. Expectations “update” with new diagnoses of health conditions
   - New cancer diagnosis associated with 5ppt fall in report

Do individuals give well-formed answers to survival expectations questions?

Expectations "update" with new diagnoses of health conditions

Condition newly diagnosed	Percentage point revision in expectation	
	1st survival question	2nd survival question
Alzheimer's disease	–7.8*	–1.9
Cancer	–4.5***	–3.0*
Dementia	7.4**	–2.6
Heart attack	–2.5	–1.3
Lung disease	–2.2	1.4
Parkinson's disease	–2.9	–8.6
Psychiatric problems	–2.0	–1.2
Stroke	–5.7***	–5.0*

Note: Coefficients represent percentage point deviations in mean response. Statistical significance at the 10%/5%/1% level is denoted by */**/***.
Standard errors are clustered at the individual level.
Source: ELSA waves 3–7. 37,760 observations of 12,027 unique individuals

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1. Expectations are correlated with key mortality risk factors
   - Smoking, drinking, age that parents died etc.
2. Expectations “update” with new diagnoses of health conditions
   - New cancer diagnosis associated with 5ppt fall in report
3. Expectations are correlated with actual 10 yr survival rates
   - Even when controlling for health, risk factors etc.

Comparing subjective reports and life tables

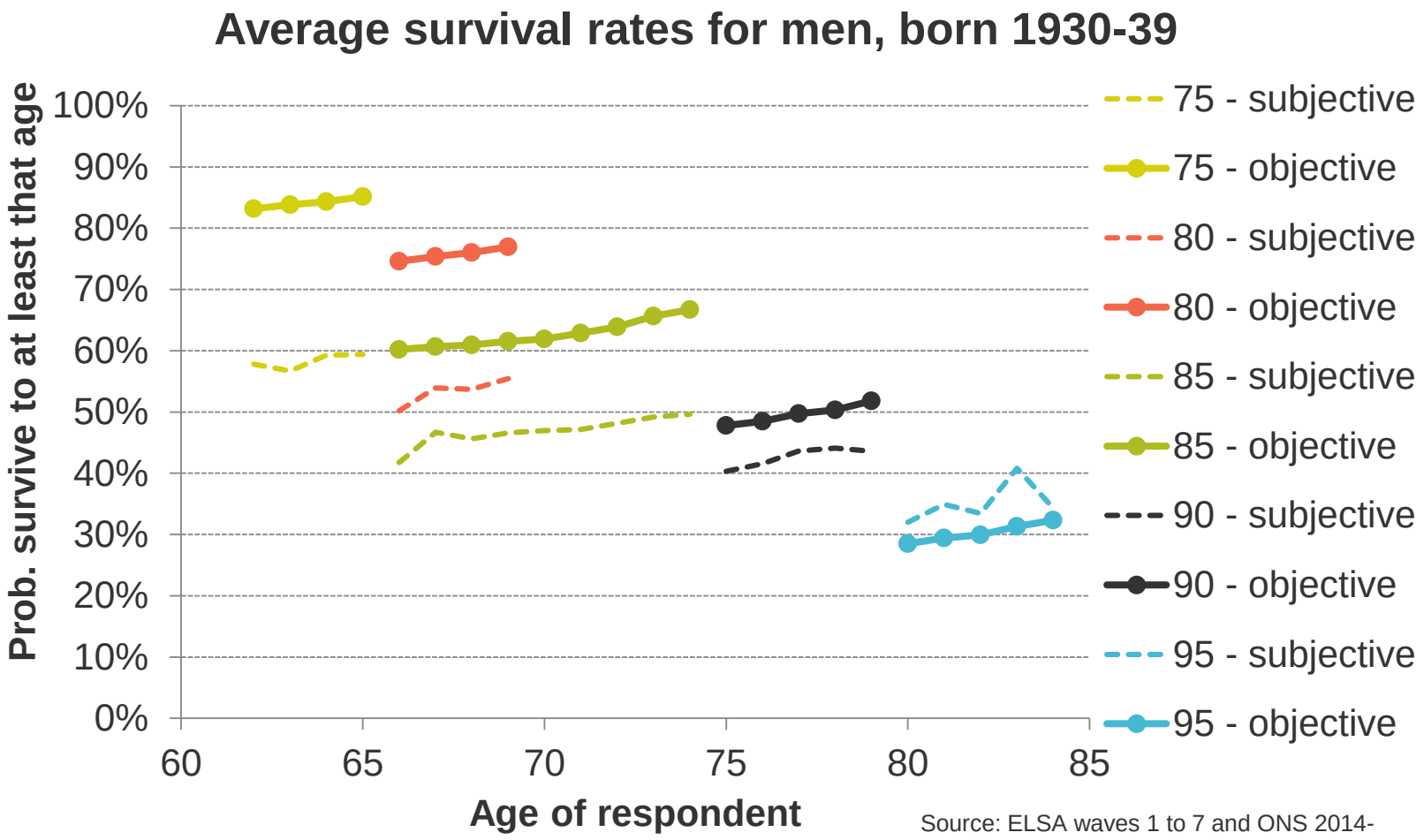
We want to assess whether individuals' expectations are accurate

- Can't assess for each respondent individually
- But if expectations not systematically wrong, on average should match actual/projected survival rates

We compare average expectations to an "objective" benchmark

- Use ONS life tables for the individual's sex, age and year of birth
- Adjust to account for lower mortality in ELSA (non-institutionalised)

Comparing subjective reports and life tables



Source: ELSA waves 1 to 7 and ONS 2014-based cohort life tables for England and Wales

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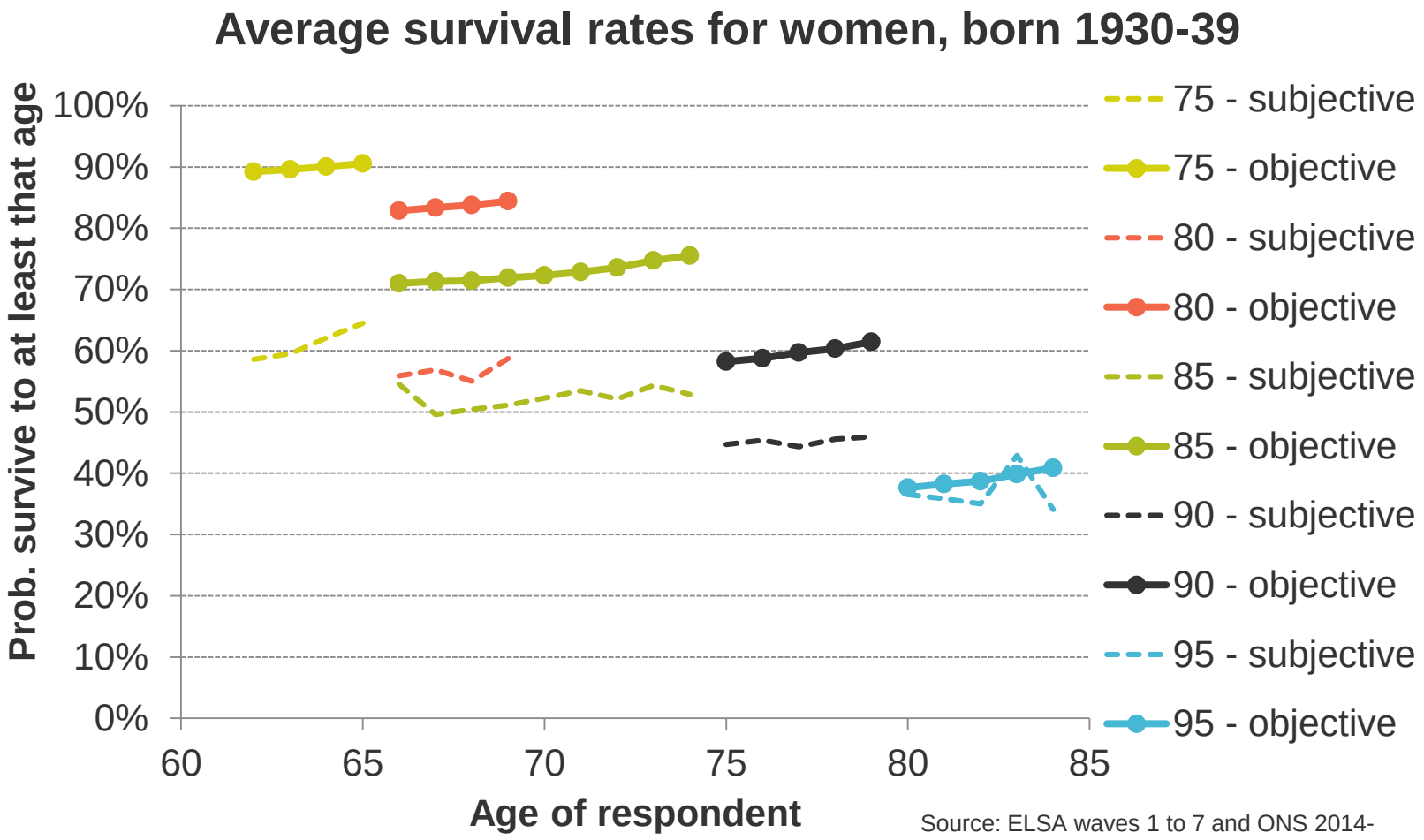

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Implications for economic behaviour

We see a stark divergence between average stated expectations and objective estimates of survival rates across sexes and cohorts

- Pessimism about survival through ages in 50s, 60s and 70s
- Mild optimism about survival through late 80s+

Range of economic choices are related to survival expectations

- Savings rate (Hurd et al., 1998)
- Retirement and claiming of social security (Hurd et al., 2004)

Potential implications for retirement savings & spending in old-age

- Pessimism may mean ‘too low’ saving & ‘too fast’ spending in 60s/70s
- Optimism at oldest ages may mean over-reluctance to spend

Implications for economic behaviour

Focus on the implications for the decision to annuitise savings

- An annuity gives its holder a guaranteed income stream until death
- Purchase price, A, receive annual income, I → annuity rate = I÷A
- A "fair" price equals expected payments, given survival probabilities

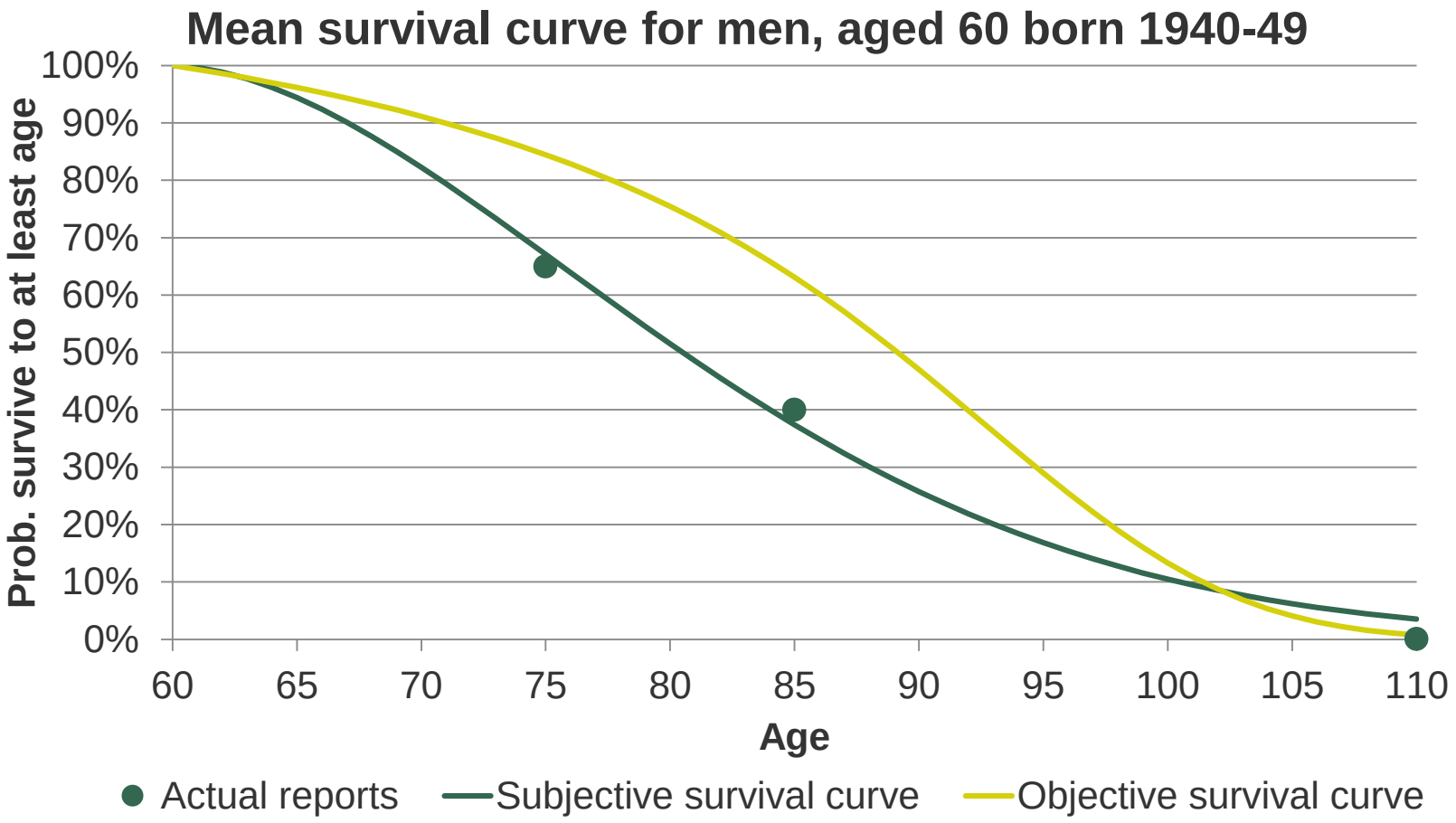
Annuities insure against the risk of outliving retirement resources

- If priced fairly, should represent a good deal for risk-averse individuals
- But if individuals mis-perceive survival chances, may not want to buy
- Depends on whether individual "pessimism" is large enough to outweigh the insurance value of an annuity

We therefore examine what proportion of individuals:

1. Perceive a fairly priced annuity as offering an unfairly low rate
2. Perception of low rate outweighs the insurance value of an annuity

Implications for economic behaviour



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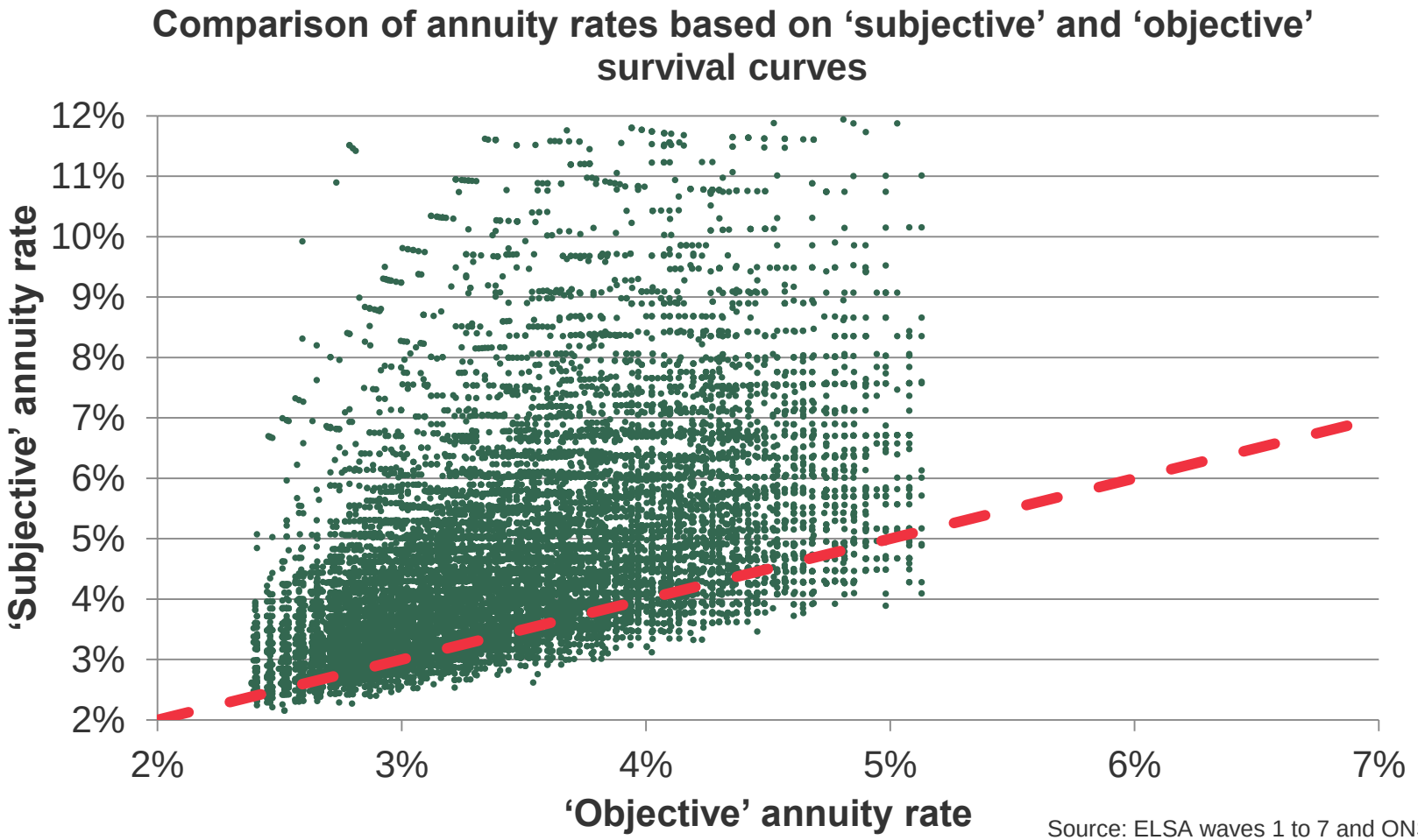

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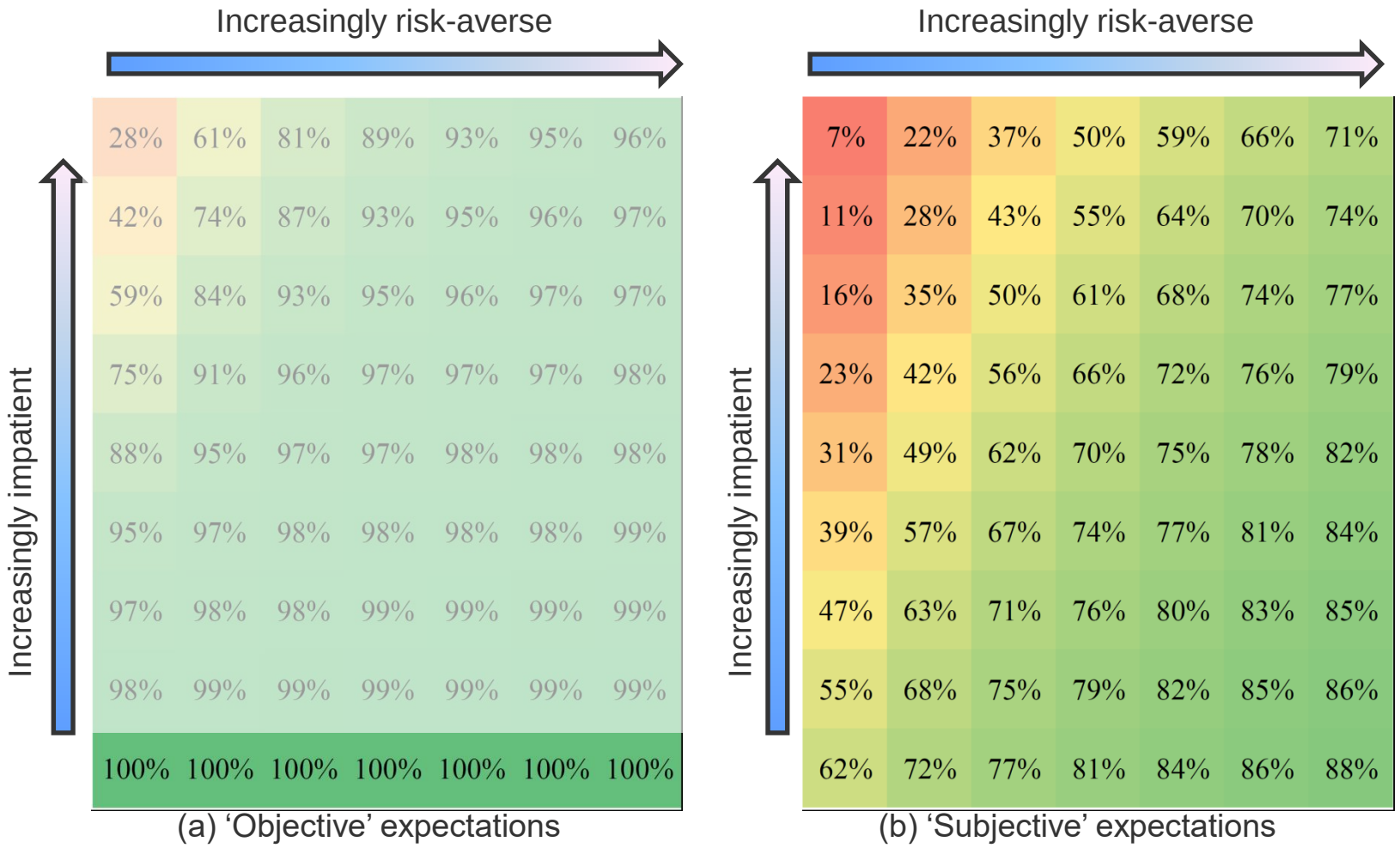
Implications for economic behaviour

Percentage of individuals predicted to choose to annuitise



Conclusions

Subjective expectations of survival show systematic biases

- Significant survival ‘pessimism’ on average, about 50s, 60s and 70s
- Mild and growing pessimism about survival through very oldest ages

Survival pessimism could explain unpopularity of annuities

- 85% of individuals would view an ‘actuarially fairly’ priced annuity as offering an unfairly low rate
- For a large proportion, this outweighs insurance value of annuity

Concerns about savings for retirement and spending at older ages

- Pessimism may mean ‘too low’ saving & ‘too fast’ spending in 60s/70s
- Optimism at oldest ages may mean over-reluctance to spend