Explaining the Valuation of Annuities and Lumpsum Options

The Role of Preferences

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Motivation

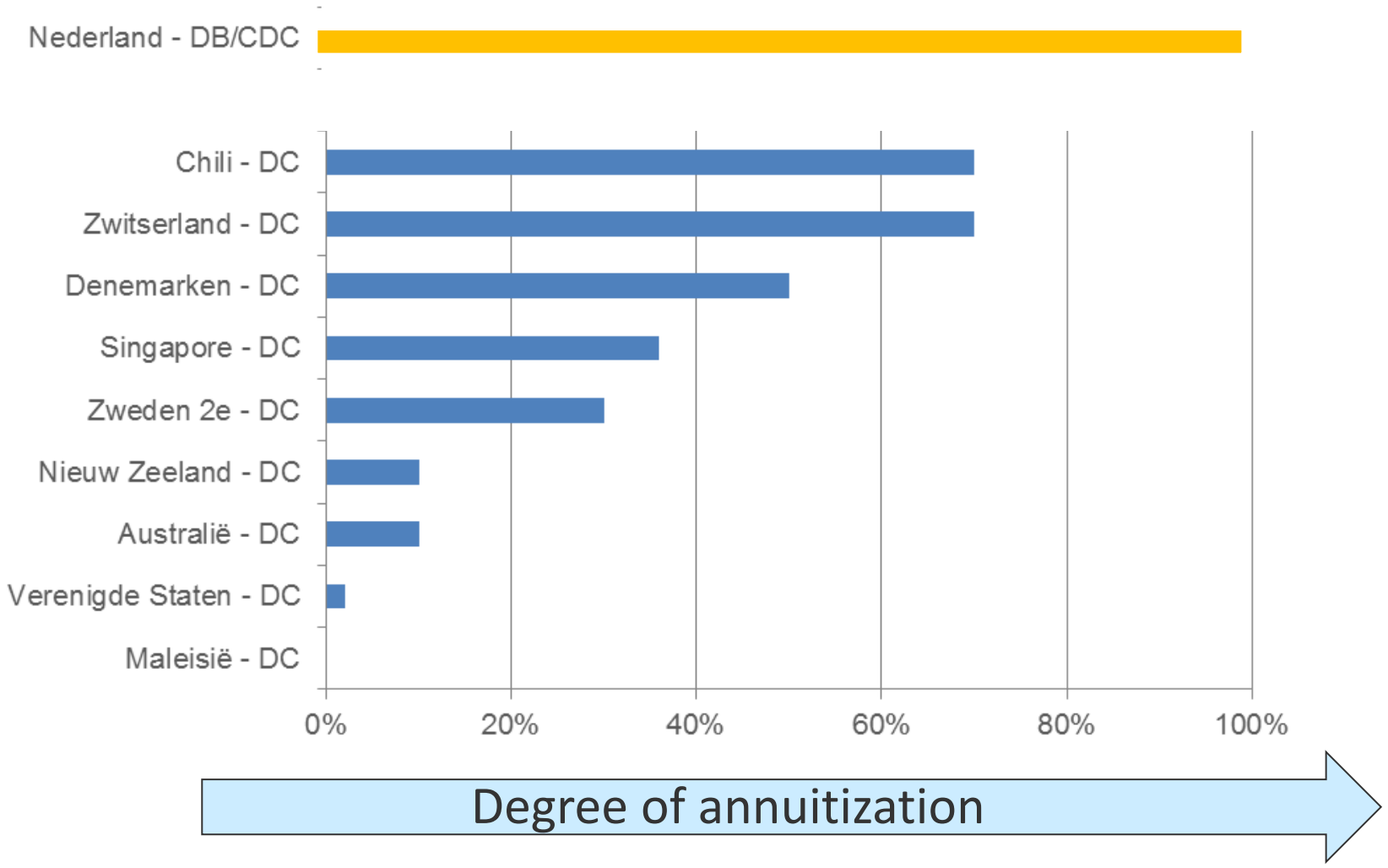
- Netherlands is an annuity country
- Pension funds must pay out pensions as a life-long annuity

- 2024: Lumpsum as new option (maximum 10% of pension capital at retirement)

- Issues pension fund industry
  - Fear big run on the lumpsum option
  - How to communicate this new product properly (choice architecture)?

- Research question paper:
  - We ask respondents to give a (financial) value to the 10% lumpsum option and the 10% annuity options?
  - What can we learn from this valuation for choice architecture?

Degree of annuitisation pension wealth at retirement in workplace pension plans



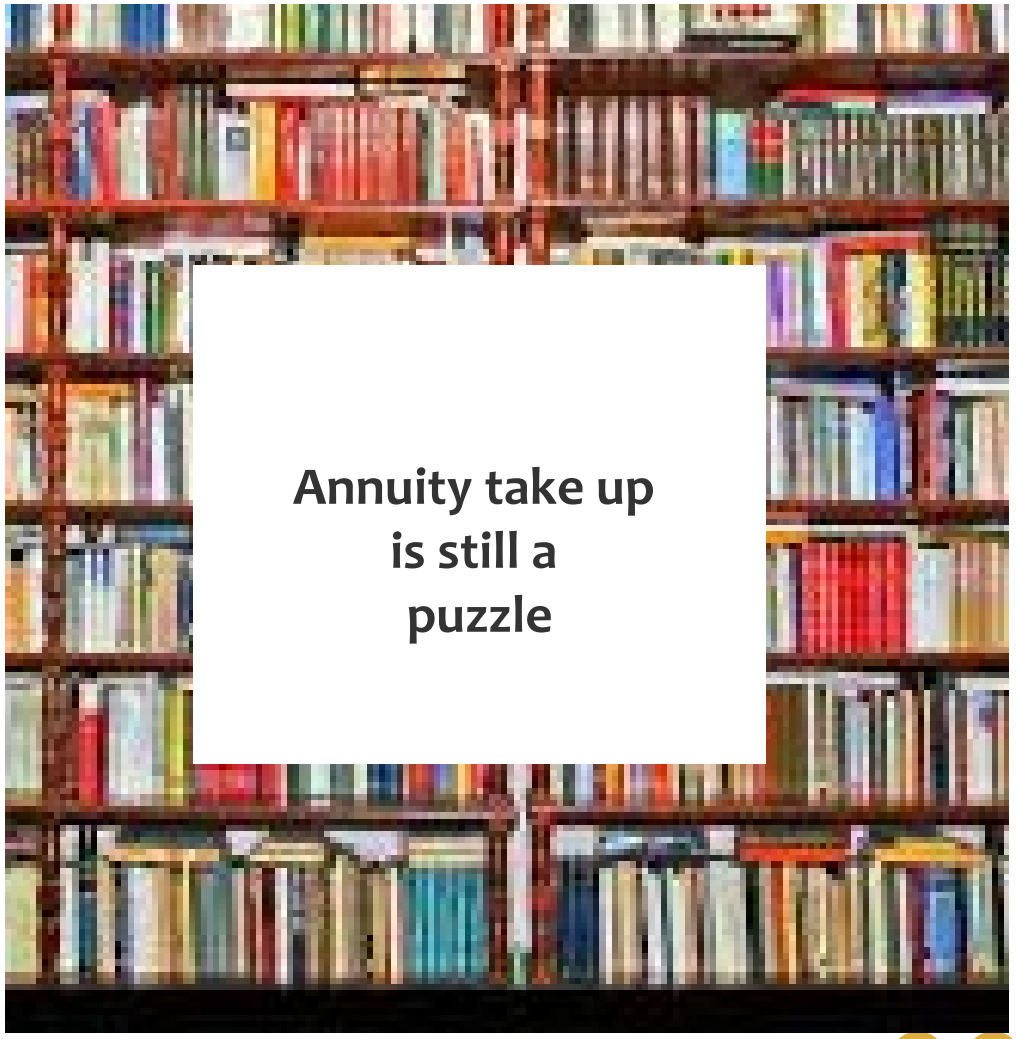
Explaing Annuity DECISIONS

- Literature mainly focused on **explaining the actual annuity decisions** by plan participants (cf. Agnew et al. 2008, Schreiber & Weber 2016, Brown 2007, Alexandra & Gatzert 2019, Lambregts & Schut, 2022).

- Stylized model Yaari (1965): 100% annuitisation

- **Rational economic perspective**
  - (Im)patience
  - Bequests
  - Life expectancy
  - Institutional aspects: - Public pensions, - Taxation, - Role social partners in plan design

- **Behavioral economic perspective**
  - Present bias (time inconsistency)
  - Cognitive constraints



Annuity VALUATION:

- **Different route**: use the information from **doing a valuation task**:
- Ask respondents to value both options and use this information to improve the **understanding of annuity decision making**

- We ask respondents two questions:

  Q1 How much lumpsum do you want in return for 10% of your annuity position?

  Q2 How much annuity do you want in return for a lumpsum position equal to 10% of pension pot?

- **Inspiration**
  - Brown, J. R., Kapteyn, A., Luttmer, E. F., & Mitchell, O. S. (2017). Cognitive constraints on valuing annuities. *Journal of the European Economic Association*
  - Brown, J. R., A. Kapteyn, E. F. P. Luttmer, O. S. Mitchell, and A. Samek. 2021. “Behavioral Impediments to Valuing Annuities: Complexity and Choice Bracketing.” *The Review of Economics and Statistics*

Inspiration and Interpretation

Brown, Kapteyn, Mitchell, Luttmer (2017, 2021)

- Valuation framework
- Rational pricing should drive valuation
- Value LS = Value Annuity
- Deviation due to cognitive constraints
- **Interventions**
  - More information → Larger deviations
  - Explain consequences → Smaller deviations

Our paper

- Valuation framework
- Preferences drive valuation
- Value LS ≠ Value Annuity
- Deviations understandable due to preferences
  - 1 Income certainty → annuity > lumpsum
  - 2 Flexibility lumpsum → lumpsum > annuity
- **Interventions**
  - Stimulate use of calculation method
  - Default - Order effect

Findings

- **Liss panel**
- Representative sample of employees (45-66) at Dutch industry pension funds (LISS)
- N=1760 with completed survey

- **Findings**
- Valuation in line with preferences
  - Subgroup “Flexibililty” (54%)
    - Low value annuity
    - High value lumpsum position
  - Subgroup “Income certainty” (29%)
    - High value annuity
    - Low value lumpsum position
- Valuation more realistic when repondents indicate using explicit or implicit calculation
- Valuation foreshadows choices at retirement
- Valuation results input for choice architecture

Valuation framework

12 income classes

Estimated gross income per year	Scaling factor	Pension pot at age 67	Annuity of 100%	Lump sum of 10%
€ 0 - € 19,999	0.2	€ 40,000	€ 200	€ 4,000
€ 20,000 - € 24,999	0.4	€ 80,000	€ 400	€ 8,000
€ 25,000 - € 28,999	0.6	€ 120,000	€ 600	€ 12,000
€ 29,000 - € 33,999	0.8	€ 160,000	€ 800	€ 16,000
€ 34,000 - € 37,999	1	€ 200,000	€ 1,000	€ 20,000
€ 38,000 - € 41,999	1.2	€ 240,000	€ 1,200	€ 24,000
€ 42,000 - € 46,999	1.4	€ 280,000	€ 1,400	€ 28.000
€ 47,000 - € 52,999	1.6	€ 320,000	€ 1,600	€ 32,000
€ 53,000 - € 57,999	1.8	€ 360,000	€ 1,800	€ 36,000
€ 58,000 - € 65,999	2.0	€ 400,000	€ 2,000	€ 40,000
€ 66,000 - € 86,999	2.6	€ 520,000	€ 2,600	€ 52,000
€ 87,000 or more	3.2	€ 640,000	€ 3,200	€ 64,000
Prefer not to answer	1	€ 200,000	€ 1,000	€ 20,000

Base case

- Dutch worker with median income of gross € 40.000
- Pension pot net €200.000 at 67

- Full annuity = € 1.000/m

- 10% lumpsum = € 20.000
- 90% annuity = € 900/m

10% Pension pot at 67		Actuarial value		Subjective value		
[1]	20.000	10% annuities = Σ 100 /m	→	Lumpsum	≠	20.000 ??
[2]	20.000	lumpsum = 20.000	→	Σ annuities	≠	100/m ??

Question 1: Valuation annuity

Which option do you chose?

- **Option A:** Each month **€1.000**
- **Option B:** **€25.000** Lumpsum and each month **€900**

Range of end values lumpsum in question 1
€32,500
€30,000
€27,500
€25,000
€22,500
€20,000
€17,500
€15,000
€12,500
€10,000
€7,500

Annuity value (standardized)

$$\frac{\text{Response Q1}}{20.000} \text{ VIA } 1$$

Question 2: Valuation lumpsum

Which option do you chose?

- **Option A:** **€20.000** Lumpsum and each month **€900**
- **Option B:** Each month **...€900 + 50 ....**

Range of end values additional annuity in question 2
€163
€150
€138
€125
€113
€100
€87
€75
€63
€50
€38

Lumpsum value (standardized)

$$\frac{\text{Response Q2}}{100} \text{ VIA } 1$$

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Expected results

Three hypotheses

H1: "Certainty"

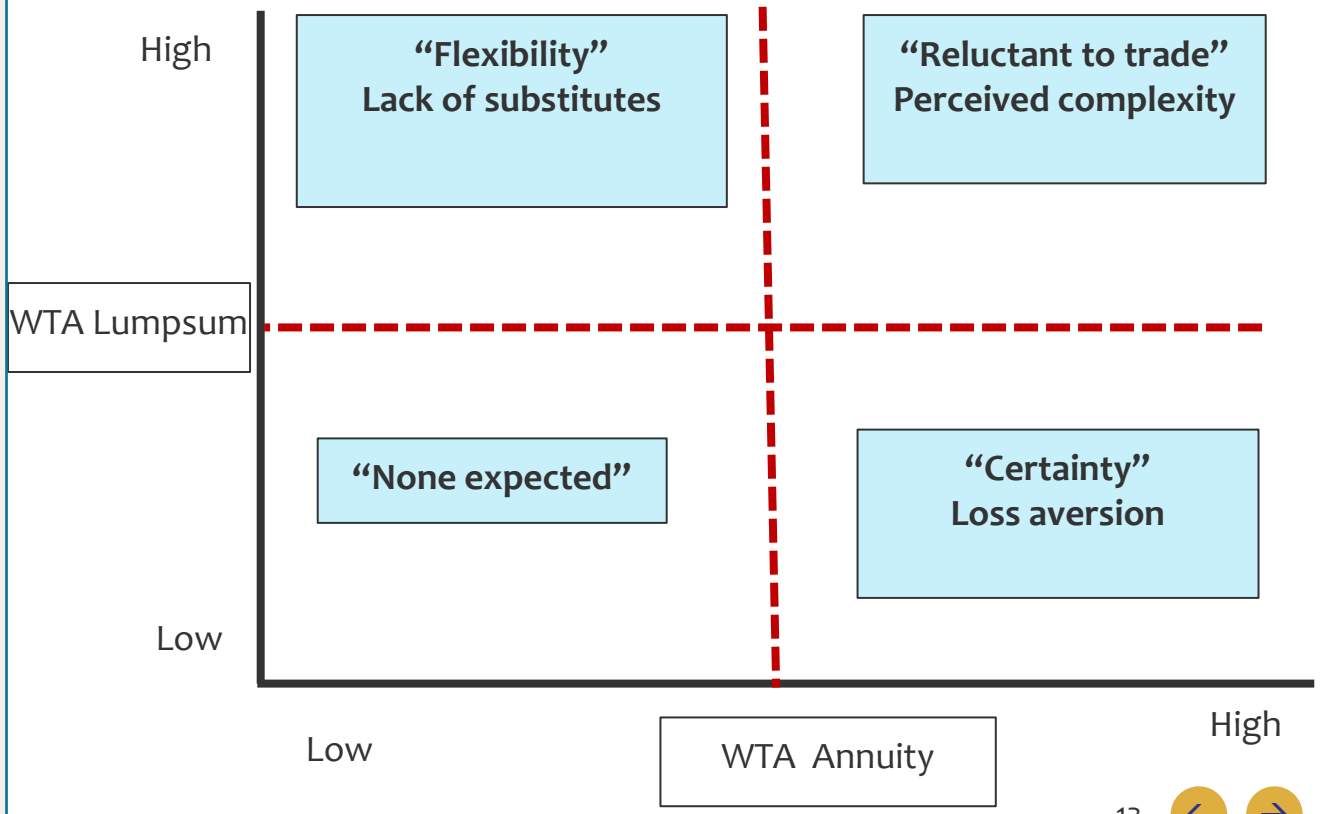
- **WTA Annuity > WTA Lumpsum**
  - Dutch PF participants are used to DB plan structure with 100% annuity - fear to lose this prospect
  - **Loss aversion:** value annuity higher than lumpsum
  - US pension funds:
    - DB plans → Annuity
    - DC plans → LS

H2: "Flexibility"

- **WTA Lumpsum > WTA Annuity**
- Dutch PF participants wealthy but **illiquid**
- Large pension pots + sizeable home equity
- Lumpsum provides liquidity, there is **no substitute**
  - Spending flexibility early retirement
  - Financial motives

H3: "Reluctant to trade"

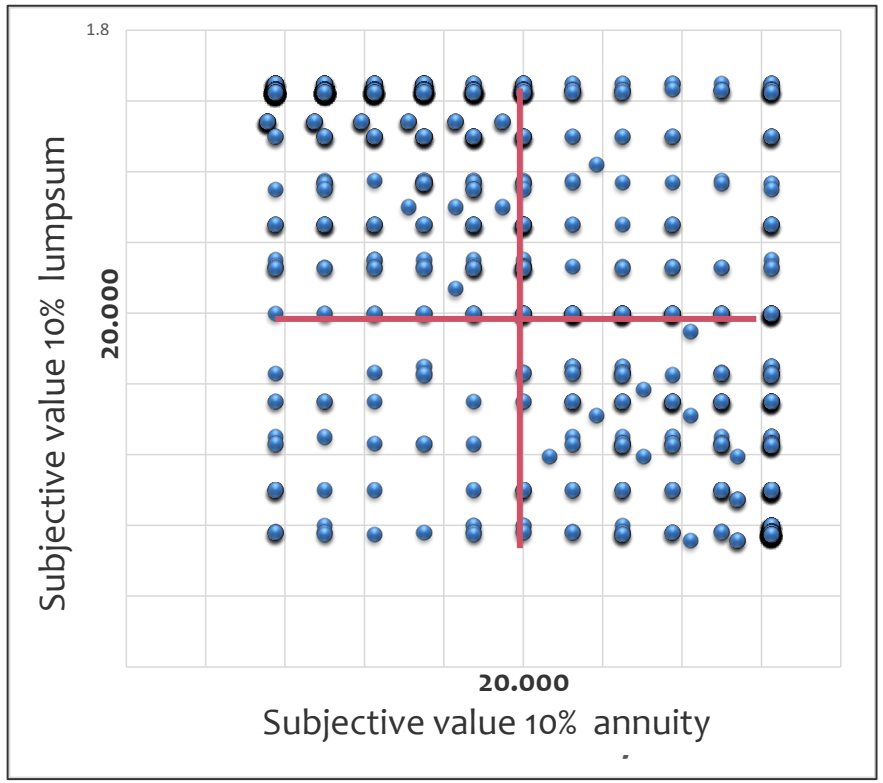
- **Both HIGH WTA Annuity & high WTA Lumpsum**
  - PF participants perceive both options as **complex**
  - They try to avoid trading, … but act when selling price gets high enough



Findings

Variation around actuarial value

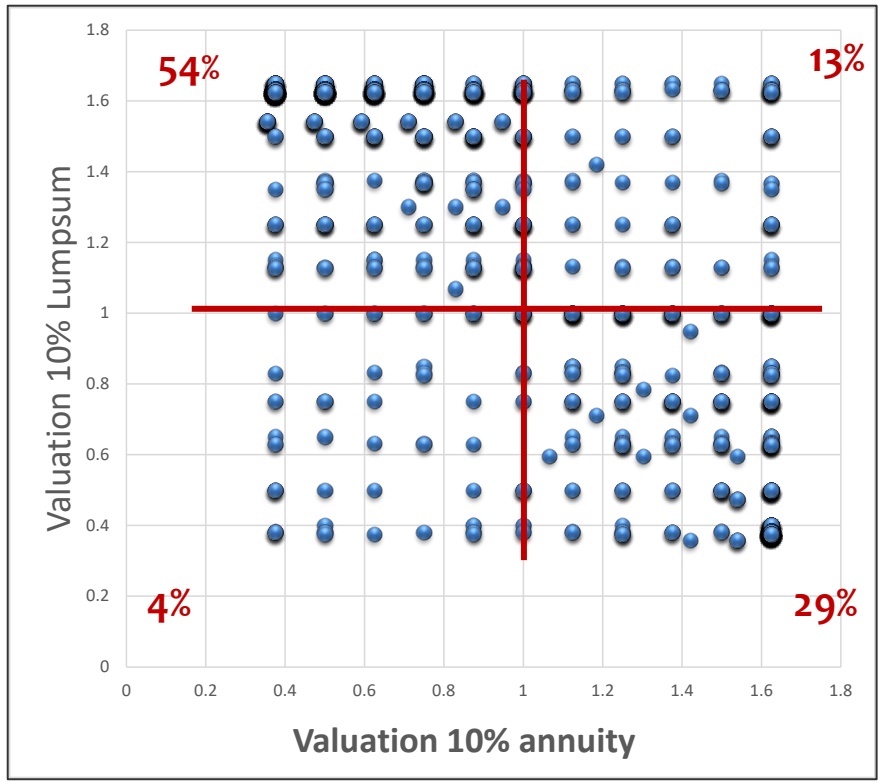
- Every dot is a combination of given **subjective valuations** to 10% annuity stream and 10% lumpsum
- 13 of the 1460 respondents: valuations match with the actuarial values
- Two interpretations (at least) for this variety:
  1) Deviations from rational pricing
  2) Expression of preferences



Results

Flexibility

Ambiguity



No one expeced

Certainty

Average valuation (in relation to actuarial value)

- **54% Flexibility**
  - Lumpsum 1.57
  - Annuity 0.57
- **29% Certainty**
  - Lumpsum 0.60
  - Annuity 1.50
- **13% Ambiguity**
  - Lumpsum 1.22
  - Annuity 1.47
- **4% None expected**
  - Lumpsum 0.56
  - Annuity 0.66

Variables (Preferences and behavioral factors) via survey questions

Benefit profile preferences

- LS Appreciation
- HL annuity Appreciation
- Intended choice at retirement age

Behavioral factors

- Loss aversion
- Risk aversion
- Long Term patience
- Short Term oriented
- Self-confidence
- Cognition index

Houshold characteristics

- Life expectancy
- Nr Children
- Income
- …Personal savings…

- **Logistic regressions**

- Benefit profile preferences
  - Appreciation LS → higher value LS

- Loss aversion higer annuity demand
  - Risk aversion not significant

- Time preferences:
  - Less patient and less short term oriented → more annuity demand

- Start question 1 (or 2):
  - Anchor effects

	Dependent variable:	
	Flexibility (1)	Certainty (2)
Appreciation LS	0.995***	-1.028***
Loss aversion	-0.593***	0.709***
Patience	-1.521***	0.390
Short termism	0.162***	-0.141**
Start question nr.1	-0.317***	0.553***
Controls	Yes	Yes
Observations	1,460	1,460
Note:	*p<0.1; **p<0.05; ***p<0.01	

Intended choice at 67

Intended choice at retirement:

Chosing between the two payout options with the same actuarial value:

- **Option A:**
  Receiving a monthly annuity of €1000
- **Option B**
  Receiving a monthly annuity of €1000 and lumpsum €20.000

- **Flexibility group**
  - Expectation 100% choice for lumpsum
  - Intention 96%

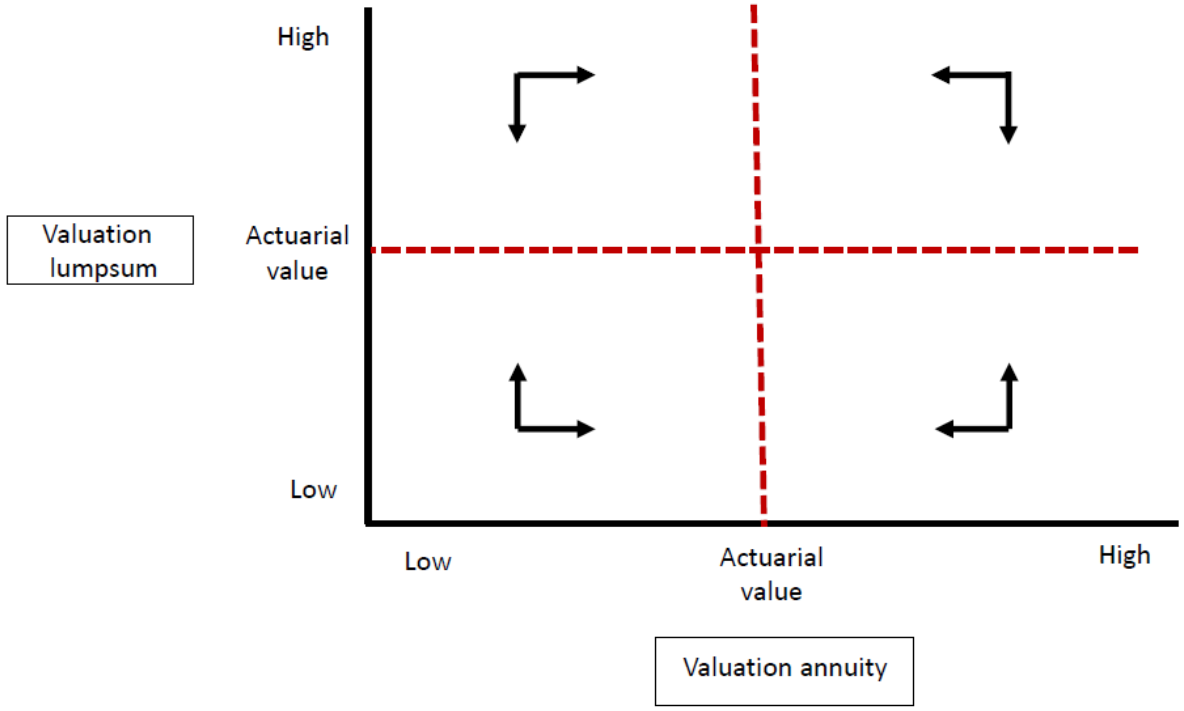
- **Certainty group**
  - Expectation 100% choice for annuity
  - Intention 87%

Open question

- Open question after valuation task
  "Please reflect about what you thought or did during valuation task"

- Classification process of the answers (verbal protocal method)
- 6 coders

- **41%** of the respondents classified as using some form of calculation
  - Explicit method
  - Implicit method



Dependent variable: **Absolute spread**		
	Flexibility	Certainty
Calculation explicit	-0.173***	-0.278***
Calculation implicit	-0.092***	-0.186***
Controls	Yes	Yes
Constant	0.774***	0.682***
Observations	875	448
R2	0.145	0.304
Adjusted R2	0.132	0.283

Note: *p<0.1; **p<0.05; ***p<0.01

Additional material in the paper

- Verbal protocol method
  - forgotten method to analyze answers on open questions

- Choice architecture
  - Confidence and first order effect
  - Framing

- Role of taxation
  - Progressive taxation
  - Negative impact on taking up a lumpsum

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Final

- Valuation in line with preferences
- Valuation more realistic when respondents indicat
  some form of calculation
- Valuation foreshadows choices at retirement
- Valuation results input for choice architecture
- Follow-up: using results for choice architecture

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