

## **Financial decision-making heuristics and matching interventions to improve behaviour.**

**NOTE: This paper is part of the already accepted session “Financial Behaviour and Well-being across Countries: Psychological and Economic Determinants”**

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Individuals make many financial decisions throughout their life cycle that have an impact on their financial well-being. But, how exactly do individuals approach financial decisions? Do they apply sophisticated formulas, back of the envelope math, do they guess or something else? And, what can we do to improve individuals' financial decision-making? Research in household finance finds numerous factors that relate to decision-making approaches as well tests which models are more or less consistent with behavioural data. We lack, however, evidence that elicits the exact decision-making approaches that individuals use, that is, particular tricks, approximations or even formulas. We show that using verbal protocol methods, that is, literally asking individuals to explain their approaches (after they solved a task) and then classifying those approaches generates rich new insights about this question.

The decision-making problem we study as an example is valuing an annuity. In Study 1, we analyse responses from a sample of U.S. survey respondents and find that roughly 40% of participants use back of the envelop calculus that for a subset of those turns out to be a simplified but correct version of the formula actuaries use to value annuities – except that no discounting is involved and not all participants include correct ingredients in the formula. The other 60% of participants primarily applies guessing strategies.

Our results are reliable in sample in that what respondents say they do, is in fact what they do. First, we show that using calculus is predicted by meaningful individual characteristics, such as numeracy and financial literacy. Second, we show saying using calculus (and the corresponding formula) predicts the valuation result in that variables used in the formula uncovered (respondents' estimate for life expectancy) predict the valuation results in the right direction. Third, the use of calculus predicts higher precision in that responses are both less dispersed as well as closer to an objective benchmark. Fourth, we use an experimental design that allows us to rule out that our results are driven by experimental demand effects (i.e., respondents telling us sophisticated models as they assume we want to hear it).

Moreover, our results have predictive power for behaviour out of sample. In Study 2, we use the insights from Study 1 to develop and successfully test a priming intervention that directly feeds into the formula uncovered. The intervention is successful in that it increases annuity demand and thus contributes to financial well-being by improving financial security in retirement. So Study 2 reveals why moving forward in studying individual decision-making approaches is important beyond scientific curiosity but also for policy-makers. Improving and deepening our understanding of individual decision-making approaches provides the basis for

designing effective interventions to improve household financial decision-making and their financial well-being.