Do People Understand Probabilities?
Probability Numeracy and Implications for Survey Research

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Netspar International Pension Workshop
Leiden, January 2017
1. Summary of paper

Object:

- Analysis of individuals' beliefs about the future and their measurement; focus on the heterogeneity in response styles across subjects about SP (who are the people who have troubles in thinking in probabilistic terms?); study the role of this heterogeneity in response anomalies.
- Use subjective probability questions to measure individual probability numeracy - e.g. the knowledge of basic probability laws - and other more sophisticated concepts - e.g. joint prob. of correlated events, autocorrelation.
- Focus on prob. of events with known true answers => validation
- Use of survey data – ALP Financial Crisis Surveys
- Compute a single probability numeracy score (PNS) from the battery of numeracy questions.
- Propose a more parsimonious PNS.

Main findings:

- Most people have a good knowledge of basic probability laws. Those who failed to answer questions about most basic probability concepts did so as a result of lack of deep thinking and patience rather than lack of knowledge.
- A very limited fraction of people are familiar with more complex probability laws (e.g. joint probabilities and autocorrelation).
- The PNS is a good predictor of the quality of survey answers: higher PNS reduces noise, focal points, missing answers.
- Implications for survey design.
2. Comments – General

- Very interesting topic, potentially underrated: how to best elicit individual beliefs about future outcomes?

- Focus on probability numeracy. Valid contribution to the literature on subjective probabilities and to experimental economics.

- Importance of a clean environment before drawing firm conclusions about subjective knowledge about economic and financial concepts.

- Credibility of research in economics. Role of best practices; role of robustness of empirical findings.
2. Comments – The data set

- Innovative and flexible instrument particularly suited to conduct elaborated experiments and test methodological aspects of survey questions.
- Robustness of results.
- Mix of long waves and short waves.

I would suggest the authors:

- to stress the properties of the data set more in the paper;
- to discuss the role of the panel component (learning-by-answering? Something on page 17, but could be more);
- to discuss the prominent role of survey data in this area vs. administrative data.
2. Comments - the research questions and the testable hypothesis

I would suggest the authors to stress the relevance of the research questions for the community of researchers increasingly demanding for efficient ways to elicit subjective information at the micro level.

I would also make par. 2.4 a bit clearer to the reader:

3 testable hypothesis:
- H1: probability numeracy inversely associated with subj.-prob. response anomalies; with DK answers; with 50\% answers => Table 5.
- H2: probability numeracy positively associated with the stability of expectations for surviving to age 75; for working full time after age 65; for stock market returns next 10 yrs => Table 6.
- H3: probability numeracy inversely associated with overestimation of small prob. events => Table 7.
2. Comments - the empirical analysis

- Probability numeracy score and financial literacy

- Predictive power of expectations for realizations
  - Not very clear to me why it is useful in this analysis
  - References:


- Many empirical results, mostly not controversial
  - Placing the numeracy earlier in the survey increases performance
  - Probability numeracy is a strong predictor of inconsistent probability answers
  - Persons with higher probability numeracy are much less likely to say DK
  - ....

- One counterintuitive empirical finding
  - In 4 out of 17 cases, probability numeracy leads to more, rather than fewer, inconsistent answers
3. Concluding remarks

- Paper is very interesting: very relevant research questions, very well thought testable hypothesis, very well executed empirical analysis.

- It sheds light on the need to think hard about the environment where individual beliefs are elicited. Importance to create a setting as clean as possible where experiments can be made.

- I particularly appreciated the efforts to propose a parsimonious PNS that could be replicated with other datasets.