Estimating Subjective Probabilities

by

Steffen Andersen, John Fountain, Glenn W. Harrison & E. Elisabet Rutström[†]

August 2009

ABSTRACT. Subjective probabilities play a role in many economic decisions. There is a large theoretical literature on the elicitation of subjective probabilities, and an equally large empirical literature. However, there is a gulf between the two. The theoretical literature proposes a range of procedures that can be used to recover subjective probabilities, but stresses the need to make strong auxiliary assumptions or "calibrating adjustments" to elicited reports in order to recover the latent probability. With some notable exceptions, the empirical literature seems intent on either making those strong assumptions or ignoring the need for calibration. We illustrate how one can *jointly estimate risk attitudes and subjective probabilities* using structural maximum likelihood methods. This allows the observer to make inferences about the latent subjective probability, calibrating for virtually any well-specified model of choice under uncertainty. We demonstrate our procedures with experiments in which we elicit subjective probabilities. We calibrate the estimates of subjective beliefs assuming that choices are made consistently with expected utility theory or rank-dependent utility theory. Inferred subjective probabilities are significantly different when calibrated according to either theory.

[†] Department of Economics and Centre for Economic and Business Research, Copenhagen Business School, Copenhagen, Denmark (Andersen); Department of Economics, University of Canterbury, Christchurch, New Zealand (Fountain); Department of Risk Management & Insurance and Center for the Economic Analysis of Risk, Robinson College of Business, Georgia State University, USA (Harrison); and Department of Economics, College of Business Administration, University of Central Florida, USA (Rutström). E-mail contacts: sa.eco@cbs.dk, john.fountain@canterbury.ac.nz, gharrison@research.bus.ucf.edu and erutstrom@bus.ucf.edu. We thank the U.S. National Science Foundation for research support under grants NSF/HSD 0527675 and NSF/SES 0616746. We are grateful to John Duffy, Peter Wakker and Randall Walsh for comments.