Plausible Theories of Behavior. Lecture 1.

In modelling ignorance/uncertainty, analysts follow the path set forth by Savage, and then by Harsanyi. One generally assumes some underlying state space, along with *precise* and "*correct*" probabilistic beliefs about this underlying state space. This assumed combination of ignorance over states, and yet certainty and accuracy over distributions over states is a useful modelling device, but it is intuitively troubling. The first lecture will be devoted to a brief overview of the various attempts to depart from these assumptions:

- *axiomatic* ones (based on a relaxation of the completeness axiom –P1, or the "sure thing principle" –P2);
- *bounded rationality* models (mostly based on introducing errors in evaluating and/or comparing alternatives, possibly stemming from the way beliefs are erroneously formed).
- *robustness* perspectives, which consist in introducing further uncertainty about distributions

We shall then explore the role of *strategy restrictions* in modelling partial ignorance.

Suggested readings

Savage, L. 1954, The Foundations of Statistics. New York: John Wiley and Sons. pages: 17-21 and chapter 4

Axiomatic perspectives dealing with partial ignorance

Bewley, T. 1986, Knightian Decision Theory, part I., Discussion paper 807, Cowles Foundation

Gilboa, Itzhak, and David Schmeidler (1989), "Maxmin Expected Utility with a Non-Unique Prior", *Journal of Mathematical Economics*, 18, 141-153.

Schmeidler, David (1989), "Subjective Probability and Expected Utility without Additivity", *Econometrica*, 57: 571-587.

Standard Bayesian model and relaxation of rationality

Harsanyi, J. 1967/68, Games with Incomplete Information Played by `Bayesian' Players, I-III," *Management Science*, 4(3): 159-182.

- Errors in evaluating alternatives:

Thurstone, L. L. (1927), "Psychophysical Analysis", *The American Journal of Psychology* Vol. 38, No. 3, pp. 368-389

Block, H. D. and J. Marschak, 1960, "Random orderings and stochastic theories of responses", in I.Olkin et al., (Eds.), Stanford University Press, Stanford, pp. 97-132.

McKelvey, R. and T. Palfrey (1995), "Quantal Response Equilibria for Normal Form Games," *Games and Economic Behavior* 10(1): 6-38.

- Errors stemming from evaluation procedure

Osborne, M. and A. Rubinstein, 1998, "Games with Procedurally Rational Players," *AER*, 88, 834-47

- Errors stemming from how beliefs are formed

Geanakoplos, J. 1989, Game Theory Without Partitions, and Applications to Speculation and Consensus, Discussion paper n. 914, Cowles Foundation http://dido.econ.yale.edu/P/cd/d09a/d0914.pdf

Gilboa, I, and D. Schmeidler 1995, "Case-Based Decision Theory," *QJE*, 110(3): 605-639.

Jehiel, P. 2005, "Analogy-Based Expectation Equilibrium," *JET* 123(2): 81-104.

* Sims, C. (2003), "Implications of Rational Inattention," *J. of Monetary Economics* 50(3): 665-690.

Wilson's critique and some robustness perspectives

Wilson, R. (1987), "Game-Theoretic Analyses of Trading Processes," in: Advances in Economic Theory: Fifth World Congress, Truman Bewley (ed.); Ch. 2, 33-70. Cambridge University Press.

Bergemann, D and S. Morris (2005), Robust Mechanism Design. *Econometrica,* 73,1771-1813.

Hansen, L. and T. Sargent (2001), "Robust Control and Model Uncertainty,"*American Economic Review* 91(2): 60-66.

S. Morris and H. S. Shin (2003), *Global Games: Theory and Applications, chapter 3,*
http://www.princeton.edu/~smorris/pdfs/paper_36_Global_Games.pdf

S. Morris and H. S. Shin (2007), Common Belief Foundations of Global Games
http://www.princeton.edu/~smorris/pdfs/cbf.pdf