

Info-Gap Economics:
Knightian Uncertainty, Modelling and Monetary Policy

Yakov Ben-Haim
Yitzhak Moda'i Chair in Technology and Economics
Technion — Israel Institute of Technology
Haifa 32000 Israel
yakov@technion.ac.il

Abstract

We discuss two ideas which are well-known in economics — satisficing and Knightian uncertainty — in the context of info-gap decision theory. We develop the idea of robust-satisficing: a decision-strategy for achieving satisfactory outcome which is robust to severe uncertainty. We discuss both prescriptive and descriptive aspects of info-gap economics.

We will begin with a brief discussion of two riddles which show the fundamental difference between Knightian uncertainty (plain ignorance) and probabilistic uncertainty. The point is that probability is not competent to describe all types of uncertainty; info-gap theory provides a necessary supplement to probability.

Prescriptively, we consider a simplified example of macro-economic policy, and develop an explanation of Brainard-like policy selection. We show when nominally sub-optimal policy choice is preferred over the best-model optimal strategy. We also demonstrate a ‘proxy theorem’ which shows that the info-gap robustness is a proxy for probability of ‘survival’. The meaning is that one can optimize the probability of adequate outcome by using the robustness function, without knowing the probability distribution at all.

Descriptively, we present an info-gap explanation of the equity premium puzzle in financial economics. The argument entails a generalization of the Lucas asset pricing relations. This generalization leads to the conclusion that robust-satisficers will have positive equity premium while optimizers will not. Numerical results suggest support for the robust-satisficing theory.