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Economic and Public Policy Formulation: Applications of Info-gap Theory

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Abstract

Info-gap theory is a method for analysis, planning, decision and design under Knightian uncertainty. The future may differ from the past, so our models may err in ways we cannot know. Our data may lack evidence about surprises: catastrophes or windfalls. Our scientific and technical understanding may be incomplete. These are info-gaps: incomplete understanding of the system being managed. Info-gap theory provides decision-support tools for modelling and managing severe uncertainty. Info-gap theory has been applied to many disciplines, including economics, engineering, biological conservation, medicine, homeland security and so on. After outlining the info-gap methodology, we explore applications to three very distinct economic policy problems: financial value at risk with uncertain quantiles, management of climate change, and forecasting an unstable process with incomplete data.

Outline

- Principle of Indifference
- Value at risk with uncertain probability distributions.
- Economic policy for managing climate change.
- Forecasting a non-stationary process with data-revision uncertainty.

Selected Publications

- Yakov Ben-Haim, 2010, *Info-Gap Economics: An Operational Introduction*, Palgrave.
- Yakov Ben-Haim, 2006, *Info-Gap Decision Theory: Decisions Under Severe Uncertainty*, 2nd edition, Academic Press, London.
- Yakov Ben-Haim, 2009, Info-gap forecasting and the advantage of sub-optimal models, *European Journal of Operational Research*, 197: 203–213.
- M.A. Burgman, B.A. Wintle, C.A. Thompson, A. Moilanen, M.C. Runge, and Yakov Ben-Haim, 2009, Reconciling uncertain costs and benefits in Bayes nets for invasive species management, *Risk Analysis: An International Journal*, vol. 30, #2, pp.277–284.
- John K. Stranlund and Yakov Ben-Haim, 2008, Price-based vs. quantity-based environmental regulation under Knightian uncertainty: An info-gap robust satisficing perspective, *Journal of Environmental Management*, 87: 443–449.
- Atte Moilanen, Astrid van Teeffelen, Yakov Ben-Haim and Simon Ferrier, How much compensation is enough? A framework for incorporating uncertainty and time discounting when calculating offset ratios for impacted habitat, *Restoration Ecology*, vol. 17, #4, pp.470–478.

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