Ellsberg's Paradox and the Value of Chances

Richard Bradley

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Ellsberg's paradox

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	Red	Black	Yellow
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L_2	\$0	\$100	\$0
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Table: The Ellsberg Paradox

- Urn contains 90 balls of which 30 are red and the rest are either black or yellow

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- Violates Savage's SEU theory

Ellsberg: The Standard Diagnosis

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- Ellsberg's explanation: **ambiguity aversion**
- Typical responses:
  1. Beliefs not probabilities (e.g. capacities)
  2. New decision rules (e.g. Max Choquet EU)

Reframing the Problem

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L_1	1/3	$\frac{1}{3}$
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- Suppose that the agent:
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  2. Regards the two possible states as equally likely

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- So, given DMU, the Ellsberg preferences are consistent with SEU.

Risk Aversion

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Table: Risk Averse Preferences

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- So chance risk aversion implies a preference for **hedging**.

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- So chance risk aversion implies **uncertainty aversion**.

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B_3	-\$100	\$0	-\$100
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Table: The Negative Ellsberg Problem

- Compare the two hypotheses:

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  2. PAA predicts uncertainty aversion here as well
- Evidence not unambiguous, but favours CRA

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- It is the latter: chances matter too.

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  2. Radicals reject 1 (Sure-Thing in particular).
  3. I reject 2. In particular Linearity:

$$U(\text{Chance } x \text{ of } G) = x.U(G)$$

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  1. Formally, the model proposed here is akin to KMM

Connections

- Halevy (Econometrica 2007): Ambiguity aversion associated with failure to reduce compound lotteries.
- Krahmer and Stone (Econ. Theory 2011)
  1. Agents anticipate regret when learning that they picked a lottery with poor chances.
  2. Asymmetry of regret and joy explained by different reference points
- KMM (Econometrica 2005)
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  2. But interpretation is quite different ...

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- **Bradley**: For concave functions $\phi^1, ..., \phi^n$:

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