PHPE 400
Individual and Group Decision Making

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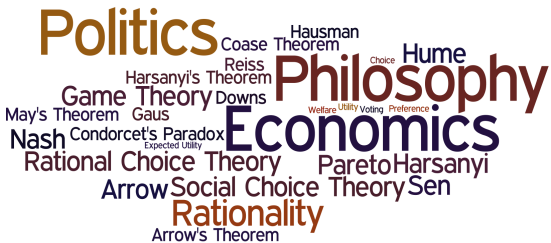

Allais Paradox

	Red (1)	White (89)	Blue (10)
L_1	$1M$	$1M$	$1M$
L_2	0	$1M$	$5M$
L_3	$1M$	$0M$	$1M$
L_4	0	$0M$	$5M$

$L_1 \; P \; L_2$ if and only if $L_3 \; P \; L_4$

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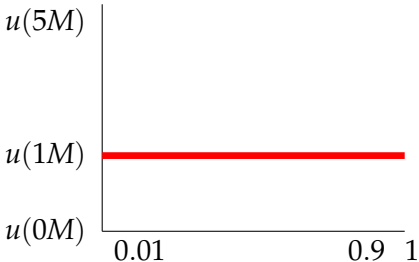

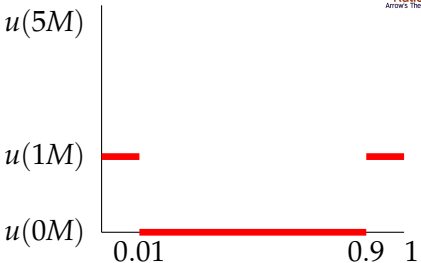

$L_1 = 0.01 \cdot 1M + 0.89 \cdot 1M + 0.1 \cdot 1M$

$L_3 = 0.01 \cdot 1M + 0.89 \cdot 0M + 0.1 \cdot 1M$

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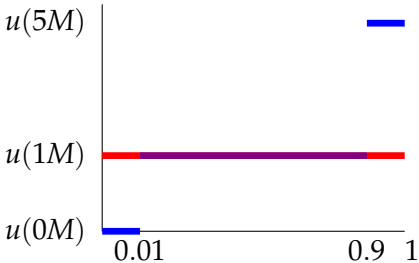

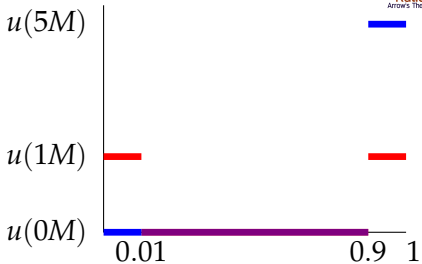

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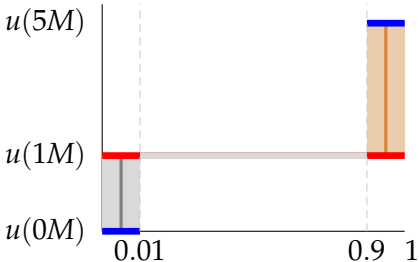

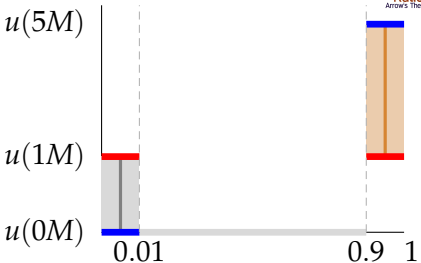

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Ellsberg Paradox

	30	60	
Lotteries	Blue	Yellow	Green
L_1	$1M$	0	0
L_2	0	$1M$	0

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Let r be any integer between 30 and 60 (i.e., $30 \leq r \leq 60$) and $q = 90 - 30 - r$

$$(\tfrac{30}{90} \cdot 1M + \tfrac{r}{90} \cdot 0M + \tfrac{q}{90} \cdot 0M) \quad P \quad (\tfrac{30}{90} \cdot 0M + \tfrac{r}{90} \cdot 1M + \tfrac{q}{90} \cdot 0M)$$

iff

$$\tfrac{30+r}{90} \cdot (\tfrac{30}{30+r} \cdot 1M + \tfrac{r}{30+r} \cdot 0M) + \tfrac{q}{90} \cdot 0M \quad P \quad \tfrac{30+r}{90} \cdot (\tfrac{30}{30+r} \cdot 0M + \tfrac{r}{30+r} \cdot 1M) + \tfrac{q}{90} \cdot 0M$$

iff

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iff

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iff

$$(\tfrac{30}{90} \cdot 1M + \tfrac{r}{90} \cdot 0M + \tfrac{q}{90} \cdot 1M) \quad P \quad (\tfrac{30}{90} \cdot 0M + \tfrac{r}{90} \cdot 1M + \tfrac{q}{90} \cdot 1M)$$

Ambiguity Aversion

I. Gilboa and M. Marinacci. *Ambiguity and the Bayesian Paradigm*. Advances in Economics and Econometrics: Theory and Applications, Tenth World Congress of the Econometric Society. D. Acemoglu, M. Arellano, and E. Dekel (Eds.). New York: Cambridge University Press, 2013.

Flipping a fair coin vs. flipping a coin of unknown bias

Evaluating Rational Choice Axioms

What should we make of the patterns found by psychologists and behavioral economists? Are these descriptive issues relevant for decision theory or rational choice theory?

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1. the subjects' preferences *genuinely* violate the axioms of the theory;
2. the subjects' preferences have changed during the course of the experiment;
3. the experimenter has overlooked a relevant feature of the context that affects the subjects' preferences.

Recommending Behavior

- One the one hand, that fact that many people have faulty reasoning about probabilities or deviate from EU theory does not mean that the theories are wrong (Hume's Law: *is* **does not** imply *can*). It could simply be that people are not naturally good at all kinds of reasoning, which is part of the reason why we study rational choice in the first place.

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- On the other hand, *ought* **does** imply *can*, meaning that if we're going to say that people should follow EU theory, it needs to be possible that they actually do so.

- The question then becomes, 'Can people consistently follow EU theory? If not, when and why not?'.

Explaining/Predicting Behavior

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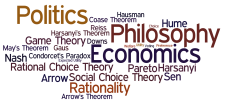
Invariance: Individuals' preferences are invariant to irrelevant changes in the context of making the decision.

A Dilemma



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Either stick to the "formal axioms" of completeness, transitivity, Independence, etc. and refuse to assume the principles of stability and invariance. But then rational choice theory will be useless for all explanatory and predictive purposes because people could have fully rational preferences that constantly change or are immensely context-dependent. Alternatively, an economists can assume stability and invariance but only at the expense of making rational-choice theory a substantive theory, a theory laden not just with values but with *the economist's* values.