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Simple axioms for countably additive subjective probability. (English)  

Summary: This paper refines Savage’s theory of subjective probability for the case of countably additive beliefs. First, I replace his continuity axioms P6 and P7 with a simple modification of K. J. Arrow’s [“Essays in the theory of risk-bearing”, Amsterdam-London: North-Holland Publishing Company VII (1970; Zbl 0215.58602)] monotone continuity. Second, I relax Savage’s primitives: in my framework, the class of events need not be a σ-algebra, and acts need not have finite or bounded range. By varying the domains of acts and events, I obtain a unique extension of preference that parallels Caratheodory’s unique extension of probability measures. Aside from subjective expected utility, I characterize exponential time discounting in a setting with continuous time and an arbitrary consumption set.

MSC:  
60A05 Axioms; other general questions in probability  
91B06 Decision theory

Keywords:  
subjective probability; monotone continuity; countable additivity; exponential time discounting

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References:  

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