

# Incomplete preferences and a unique subjective state space

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## Abstract

The objective of this study is to relate two renowned models of uncertainty, namely, expected multi-utility (Dubra et al. 2004) and ordinal expected utility in a unique subjective state space model (Dekel et al. 2001). To this end, we propose axiomatizations that derive joint representations of these two models, wherein the set of utility functions in the former is equivalent to the subjective state space in the latter. This result indicates that these two representations describe the identical underlying principle to address uncertainty. The key axiom is *dominance consistency*, which requires that the addition of an alternative to a menu strictly improve the menu evaluation if and only if the alternative is undominated by the menu. The main result can be extended to a specific class of ordinal expected utility, such as the additive representation. The relationship between the preference over alternatives and the commitment ranking is also discussed.

**Keywords:** uncertainty, expected multi-utility, unique subjective state space, dominance consistency

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