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Emmanuel Haven, Andrei Khrennikov, Chenghu Ma, Sandro Sozzo

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Editorial

Introduction to quantum probability theory and its economic applications

Emmanuel Haven, Memorial University, Canada

Andrei Khrennikov, Linnaeus University, Sweden

Chenghu Ma, Fudan University, China

Sandro Sozzo, University of Leicester, UK

Because of its mathematical elegance and simplicity, manageability and predictive success, expected utility theory (EUT) provides both the normative and descriptive foundations of decision-making under uncertainty.

Following Knight's (1921) distinction between 'objective uncertainty' (or 'risk') and 'subjective uncertainty' (or 'ambiguity'), von Neumann and Morgenstern (1944) provided for an axiomatic framework which defined EUT using objective probability. Savage (1954) and then Anscombe and Aumann (1963) further generalized EUT also in an axiomatic way.

Boolean logic , and Bayesian probability theory, axiomatized by Kolmogorov (1950), provide for mathematical structures which have been, and currently still are, at the heart of modelling human rational behavior in the presence of uncertainty.

Although the economics and finance literature supplies numerous examples where EUT can be seen to work well, the economics profession is well aware of paradoxes such as the Allais (1953) paradox and Ellsberg's (1961) 'ambiguity aversion', and the profession is equally aware of the usefulness of non-expected utility theory in resolving some well documented empirical puzzles in finance. Camerer and Weber (1992) and Machina and Siniscalchi (2014) provide extensive reviews of non-expected utility theory, while Epstein (1992) and Ma (2011) cover non-expected utility theory for its applications in asset pricing theory.