

Department of Decision Sciences

Statistics Seminar

Orderings of Generalized-Lorenz type: an Extended Equivalence Theorem

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Thursday, 15th November 2012

12:30pm Room 3-E4-SR03 Via Röntgen 1 Milano

Abstract

Stochastic orderings are an attractive way of summarizing preferences between distributions both in individual and in collective decision-making. There is a duality theory connecting certain stochastic orderings between cumulative distribution functions (cdf) and stochastic orderings between their inverses (quantile functions). An example is the equivalence between second order stochastic dominance and the generalized Lorenz ordering, which makes it possible to “bridge” Expected Utility and decision making under risk with the theories of social choice. A large family of social welfare functions have the form of expected utilities.

The purpose of this presentation is to point out that this bridge can be widened by means of an Extended Equivalence Theorem, namely this duality holds also when there is "distortion" of the cdf and of the inverse. The extended theorem allows one to derive a wide class of social indicators from general-form utilities (and viceversa). It also helps clarify further connections between Prospect Theory (i.e. Rank Dependent Expected Utilities) and Yaari-type rank-dependent social welfare indicators.