# Inverse stochastic dominance constraints and rank dependent expected utility theory*

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**Abstract**

We consider optimization problems with second order stochastic dominance constraints formulated as a relation of Lorenz curves. We characterize the relation in terms of rank dependent utility functions, which generalize Yaari's utility functions. We develop optimality conditions and duality theory for problems with Lorenz dominance constraints. We prove that Lagrange multipliers associated with these constraints can be identified with rank dependent utility functions. The problem is numerically tractable in the case of discrete distributions with equally probable realizations.

KEYWORDS: Stochastic Dominance – Lorenz Curve – Yaari's Dual Utility –Rank Dependent Expected Utility – Optimality – Duality – Stochastic Programming

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