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Andrzej Ruszczynski* (rusz@rutgers.edu) and **Darinka Dentcheva**. *Risk Preferences on the Space of Quantile Functions*.

We propose a novel approach to quantification of risk preferences on the space of nondecreasing functions. When applied to law invariant risk preferences among random variables, it compares their quantile functions. The axioms on quantile functions impose relations among comonotonic random variables. We infer the existence of a numerical representation of the preference relation in the form of a quantile-based measure of risk. Using conjugate duality theory by pairing the Banach space of bounded functions with the space of finitely additive measures on a suitable algebra, we develop a variational representation of the quantile-based measures of risk. Furthermore, we introduce a notion of risk aversion based on quantile functions, which enables us to derive an analogue of Kusuoka representation of coherent law-invariant measures of risk. (Received June 06, 2015)