**Upper Bounds for Concave Distortion Risk Measures on Moment Spaces**

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The study of worst-case scenarios for a risk measure (e.g., Value-at-Risk) when the underlying risk (or portfolio of risks) is not completely specified is a central topic in the literature on robust risk measurement. For instance, upper bounds for Value-at-Risk under the sole knowledge of some of the moments of the underlying risk are available in the academic literature. We tackle the open problem of deriving upper bounds for concave distortion risk measures on moment spaces. Building on early results of Rustagi (1957, 1976), we show that in general this problem can be reduced to a parametric optimization problem. We obtain the worst-case scenario (distribution) when the first moment and any other higher moment are fixed. Specifically, in the case of a fixed mean and variance, we are able to express this worst-case distorted expectation as a weighted sum of the mean and standard deviation and thus generalize the seminal Cantelli bound that is valid for (Tail) Value-at-Risk.