Risk bounds under dependence uncertainty

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Abstract

We discuss several approaches to improve risk bounds for aggregated portfolios of risks based on marginal information. By a series of papers it has become clear that the dependence uncertainty on the aggregated risks based on marginal information only is typically too wide to be acceptable in applications.

Several methods to reduce DU-uncertainty have been developed recently to include structural and partial dependence information in order to reduce the model uncertainty. These include higher order marginals(method of reduced bounds), global variance or higher order moment bounds, positive or negative dependence restrictions and structural information given by common risk factors (partially specified risk factor models) or by models with subgroup structures. Also an effective two-sided variant of the method of improved standard bounds has been developed. Several applications show that these improved risk bounds may lead to results acceptable in praxis.