Comparison of multivariate risks, new results and applications

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January 31st, 2014

Abstract

In this presentation, we discuss several new results on the orthant convex order. First, a multivariate version of Karlin–Novikoff cut–criterion is presented. A sufficient condition for the orthant convex order based on the single crossing of the respective mutivariate survival functions is derived. Numerical examples show that this condition is valid for members of standard copula families. Then, an interesting link between this order and the concept of comonotonicity is established. This result is applied to derive bounds on random vectors made of sums of correlated random variables, extending to the multivariate case previous results appeared in the literature. Finally, a practical use of these tools in the actuarial field is presented.