Tail mutual exclusivity and Tail-VaR lower bounds

Ka Chun CHEUNG[1], Michel DENUIT[2], Jan DHAENE[3]

[1] *The University of Hong Kong, Pokfulam Road, Hong Kong, kccg@hku.hk, 852-39171987*
[2] *Université Catholique de Louvain*
[3] *Katholieke Universiteit Leuven*

Abstract

In this talk, we extend the concept of mutual exclusivity proposed by Dhaene and Denuit (1999) to its tail counterpart and baptise this new dependency structure as tail mutual exclusivity. Probability levels are first specified for each component of the random vector. Under this dependency structure, at most one exceedance over the corresponding VaRs is possible, the other components being zero in such a case. No condition is imposed when all components stay below the VaRs. Several properties of this new negative dependence concept are derived. We show that this dependence structure gives rise to the smallest value of Tail-VaR of a sum of risks within a given Fréchet space, provided that the probability level of the Tail-VaR is close enough to one.

Keywords Mutual exclusivity, stop-loss transform, tail convex order, risk measures