Dr. Philipp ARBENZ
SCOR Zürich

High dimensional risk aggregation: a hierarchical approach with copulas

Risk aggregation is highly relevant for solvency calculations, risk management and capital allocation. From a statistical and computational point of view, most risk aggregation methodologies are very challenging in high dimensions. A prudent approach requires the consideration of dependencies between all risks, which caused the popularity of copulas. However, the common copula classes are restrictive and too symmetric. We present a hierarchical risk aggregation method which is flexible in high dimensions. With this method it suffices to specify low dimensional copulas for each aggregation step in the hierarchy. Arbitrary copulas and margins can be combined. An efficient algorithm for numerical approximation is presented

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For any information, please contact
Frédérique JEAN-LOUIS
(01 34 43 32 49 / jeanlouis@essec.fr)

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