

Block-maxima of vines

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We examine the dependence structure of finite block-maxima of multivariate distributions. We provide a closed form expression for the copula density of the vector of the block-maxima. Further, we show how partial derivatives of three-dimensional vine copulas can be obtained by only one-dimensional integration. Combining these results allows the numerical treatment of the block-maxima of any three-dimensional vine copula for finite block-sizes. We look at exemplary vine copulas and examine how the density of the block-maxima behaves for different block-sizes. In extreme value theory for multivariate normal distributions a certain scaling of the considered variables and their correlation matrix is necessary to obtain a non-trivial limiting distribution if we let the block-size of the maxima go to infinity. This scaling is applied to different exemplary three-dimensional vine copulas.

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