

A parametric test for the domain of attraction of a copula

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Extreme value theory plays a role in various fields, such as in insurance, finance, or environmental sciences. All those applications have the common interest to estimate the probability and possible consequences of extremal risks, i.e. risks, that occur rarely, but have a great impact on some quantity of interest.

In multivariate extreme value theory, one is interested in modelling the joint behaviour of two or more extremal events. In particular, it is important to find out, whether these extremal events are independent of each other, or if there is a certain dependence structure, which then can be investigated. Most of the known families of copulas have a certain extremal dependence structure and then we say that the copula lies in the *domain of attraction* of an extreme value copula. However, there exist copulas where this is not the case. Our goal is to extend and generalize the paper by Aulbach and Falk (2013). They showed that a copula lies in the domain of attraction of an extreme value copula if and only if it is tail equivalent to a so called *generalized Pareto copula*. Moreover, they proposed a χ^2 -goodness-of-fit test in order to check the hypothesis that a copula lies in a certain neighborhood of a generalized Pareto copula, without specifying the underlying copula family. In another paper, Falk and Michel (2006) proposed a number of tests in order to check if a copula lies in the domain of attraction of the independence copula. We propose a test which checks whether a copula lies in the domain of attraction of an arbitrary extreme value copula family.