Statistics > Methodology

Large-sample tests of extreme-value dependence for multivariate copulas

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Starting from the characterization of extreme-value copulas based on max-stability, large-sample tests of extreme-value dependence for multivariate copulas are studied. The two key ingredients of the proposed tests are the empirical copula of the data and a multiplier technique for obtaining approximate p-values for the derived statistics. The asymptotic validity of the multiplier approach is established, and the finite-sample performance of a large number of candidate test statistics is studied through extensive Monte Carlo experiments for data sets of dimension two to five. In the bivariate case, the rejection rates of the best versions of the tests are compared with those of the test of Ghoudi, Khoudraji and Rivest (1998) recently revisited by Ben Ghorbal, Genest and Neslehova (2009). The proposed procedures are illustrated on bivariate financial data and trivariate geological data.

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