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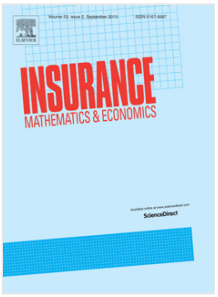

Recognizing and visualizing copulas: An approach using local Gaussian approximation

Geir Drage Berentsen, Bård Støve, Dag Tjøstheim, Tommy Nordbø

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Recognizing and visualizing copulas: an approach using local Gaussian approximation

Geir Drage Berentsen, Bård Støve*, Dag Tjøstheim and Tommy Nordbø
University of Bergen, Department of Mathematics,
PO Box 7803, 5020 Bergen, Norway

Abstract

In this paper we examine the relationship between a newly developed local dependence measure, the local Gaussian correlation, and standard copula theory. We are able to describe characteristics of the dependence structure in different copula models in terms of the local Gaussian correlation. Further, we construct a goodness-of-fit test for bivariate copula models. An essential ingredient of this test is the use of a canonical local Gaussian correlation and Gaussian pseudo-observations which make the test independent of the margins, so that it is a genuine test of the copula structure. A Monte Carlo study reveals that the test performs very well compared to a commonly used alternative test. We also propose two types of diagnostic plots which can be used to investigate the cause of a rejected null. Finally, our methods are applied to a "classical" insurance data set.

Keywords: Copulas, goodness-of-fit, local Gaussian correlation

*Corresponding author. Tel. +47 55 58 28 86. E-mail: Bard.Stove@math.uib.no.