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Sampling nested Archimedean copulas

Alexander J. McNeil

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Abstract

We give algorithms for sampling from non-exchangeable Archimedean copulas created by the nesting of Archimedean copula generators, where in the most general algorithm the generators may be nested to an arbitrary depth. These algorithms are based on mixture representations of these copulas using Laplace transforms. While in principle the approach applies to all nested Archimedean copulas, in practice the approach is restricted to certain cases where we are able to sample distributions with given Laplace transforms. Precise instructions are given for the case when all generators are taken from the Gumbel parametric family or the Clayton family; the Gumbel case in particular proves very easy to simulate.

Keywords:

Archimedean copulas | Laplace transforms | Stochastic simulation

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Additional information

Notes on contributors

Alexander J. McNeil
*Email: A.J.McNeil@hw.ac.uk

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