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Moment based estimation of supOU processes and a related stochastic volatility model P. 1
Stelzer, Robert - Tosstorff, Thomas - Wittlinger, Marc

Abstract
After a quick review of superpositions of OU (supOU) processes, integrated supOU processes and the supOU stochastic volatility model we estimate these processes by using the generalized method of moments (GMM). We show that the GMM approach yields consistent estimators and that it works very well in practice. Moreover, we discuss the influence of long memory effects.

Quasi-Hadamard differentiability of general risk functionals and its application P. 25
Krätschmer, Volker - Schied, Alexander - Zähle, Henryk

Abstract
We apply a suitable modification of the functional delta method to statistical functionals that arise from law-invariant coherent risk measures. To this end we establish differentiability of the statistical functional in a relaxed Hadamard sense, namely with respect to a suitably chosen norm and in the directions of a specifically chosen “tangent space”. We show that this notion of quasi-Hadamard differentiability yields both strong laws and limit theorems for the asymptotic distribution of the plug-in estimators. Our results can be regarded as a contribution to the statistics and numerics of risk measurement and as a case study for possible refinements of the functional delta method through fine-tuning the underlying notion of differentiability.

Series expansions for convolutions of Pareto distributions P. 49
Nguyen, Quang Huy - Robert, Christian Y.

Abstract
Asymptotic expansions for the tails of sums of random variables with regularly varying tails are mainly derived in the case of identically distributed random variables or in the case of random variables with the same tail index. Moreover, the higher-order terms are often given under the condition of existence of a moment of the distribution. In this paper, we obtain infinite series expansions for convolutions of Pareto distributions with non-integer tail indices. The Pareto random variables may have different tail indices and different scale parameters. We naturally find the same constants for the first terms as given in the previous asymptotic expansions in the case of identically distributed random variables, but we are now able to give the next additional terms. Since our series expansion is not asymptotic, it may be also used to compute the values of quantiles of the distribution of the sum as well as other risk measures such as the Tail Value at Risk. Examples of values are provided for the sum of at least five Pareto random variables and are compared to those determined via previous asymptotic expansions or via simulations.

A copula-based hierarchical hybrid loss distribution P. 73

Bernardi, Enrico - Romagnoli, Silvia

Abstract

We propose a model for the computation of the loss probability distribution allowing to take into account the not-exchangeable behavior of a portfolio clustered into several classes of homogeneous loans. These classes are classified as `large' or `small' depending on their cardinality. The hierarchical hybrid copula-based model (HHC for short) follows the idea of the clusterized homogeneous copula-based approach (CHC) and its limiting version or the limiting clusterized copula-based model (LCC) proposed in our earlier work. This model allows us to recover a possible risk hierarchy. We suggest an algorithm to compute the HHC loss distribution and we compare this cdf with that computed through the CHC and LCC approaches (in the Gaussian and Archimedean limit) and also with the pure limiting approaches which are commonly used for high-dimensional problems. We study the scalability of the algorithm.