Calibration of Multivariate Generalized HyperbolicDistributions

By Wenbo Hu

VDM Verlag Feb 2009, 2009. Taschenbuch. Book Condition: Neu. 220x150x7 mm. Neuware - The distributions of many financial quantities are well-known to have heavy tails, exhibit skewness. We study an especially promising family: multivariate generalized hyperbolic distributions(GH). This family includes Gaussian and Student t distributions, and the so-called skewed t distributions. We describe a way to stably calibrate GH distributions for a wider range of parameters than has previously been reported. We apply GH distributions in three financial applications. First, we forecast the VaR for stock index returns, and show that the GH distributions outperform the Gaussian distribution. Second, we calculate an efficient frontier for equity portfolio optimization under the skewed-t distribution and we show that the Gaussian efficient frontier is actually unreachable. Third, we build an intensity-based model to price Basket Credit Default Swaps by calibrating the skewed t distribution directly, without the need to separately calibrate the skewed t copula. This book is useful to academic research of GH distributions for both theory and calibration. It is also useful to quantitative finance analysts and numeric algorithm developers. 116 pp. Englisch.

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