



The University of Chicago

Department of Statistics

Seminar Series

WOLFGANG HÄRDLE

Institute for Statistics and Econometrics, Humboldt University, Berlin

“Calculating Value at Risk: GHADA and GHICA”

MONDAY, March 6, 2006 at 4:00 PM
133 Eckhart Hall, 5734 S. University Avenue
Refreshments following the seminar in Eckhart 110.

ABSTRACT

Risk management technology applied to high dimensional portfolios needs simple and fast methods for calculation of Value-at-Risk (VaR). The multivariate normal framework provides a simple off-the-shelf methodology but lacks the heavy tailed distributional properties that are observed in data. A principle component based method (tied closely to the elliptical structure of the distribution) is therefore expected to be unsatisfactory. Here we propose and analyze a technology that is based on Independent Component Analysis (ICA) in combination with Generalized Hyperbolic (GH) distributions. These distributions offer a flexible alternative. We study the proposed GHADA (adaptive choice of volatility) and GHICA methodology in an extensive simulation study and apply it to a high dimensional portfolio situation. Our analysis yields accurate VaRs.

Keywords: independent component analysis, Value-at-Risk JEL code: C14, C15, C32, C53, G20

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