

The Working Group on Risk, with the support of the group BFA (SFdS) & Institut des Actuaire (IA), has the pleasure to invite you to the Seminar by:

Prof. Alexander McNEIL

Director of the Scottish Financial Risk Academy (SFRA)
Heriot-Watt Edinburgh University (UK)

Monday, May 5, 2014 at 12:30 pm
EEE - ESSEC La Défense – room 103

Multivariate Stress Testing for Solvency

We examine the problem of computing multivariate scenarios sets based on skewed multivariate distributions of financial risk factors. Our interest is motivated by the potential use of such sets in the stress testing of insurance companies and banks whose solvency is dependent on changes in these risk factors. We define multivariate scenario sets based on the notion of half-space depth (HD) and also introduce the notion of expectile depth (ED) where half-spaces are defined by expectiles rather than quantiles. We then use the HD and ED functions to define convex scenario sets that generalise the concepts of quantile and expectile to higher dimensions. In the case of elliptical distributions these sets coincide with the regions encompassed by the contours of the density function. In the context of multivariate skewed distributions, the equivalence of depth contours and density contours does not hold in general. We discuss issues related to the computation of these sets and their use in risk management practice.

This talk is based on joint work with Andrew Smith and Emanuele Giorgi.

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Alexander McNEIL is Maxwell Professor of Mathematics in the Department of Actuarial Mathematics and Statistics at Heriot-Watt University. He is also Director of the Scottish Financial Risk Academy (SFRA), which organises knowledge exchange activities between the university and financial sectors in Scotland including Risk Colloquia, training events and postgraduate placements in industry. Formerly Assistant Professor in the Department of Mathematics at ETH Zurich he has a BSc in mathematics from Imperial College, London and a PhD in mathematical statistics from Cambridge University. His interests lie in the development of mathematical and statistical methodology for integrated financial risk management and include extreme value theory (EVT), risk theory, financial time series analysis and the modelling of correlated risks. He has published papers in leading statistics, econometrics, finance and insurance mathematics journals and is a regular speaker at international risk management conferences. He is joint author, together with Rüdiger Frey and Paul Embrechts, of the book "Quantitative Risk Management: Concepts, Techniques and Tools", published by Princeton University Press in 2005.

