

Finance and Insurance Mathematics in Zürich

Newsletter 10. Nov. 2003*

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1. **Finance and Insurance Mathematics** Talks at ETH Zurich,
<http://www.math.ethz.ch/finance/talks.html>

Time: Tuesday, 11. Nov. 2003, 12.15-13.00

Venue: ETH Zurich, Hermann-Weyl-Zimmer, HG G43

Speaker: Prof. Dr. Zhengjun Zhang, Washington University St. Louis, FIM Guest ETH Zurich

Title: Testing Hypothesis of Tail Independence and New Tail Dependence Measures

Abstract: Tail dependencies, or extremal dependencies, exist in many observed multivariate time series, such as stock returns, internet traffic data, etc. Constructing a test statistic for tail independence has been regarded as an open problem. Existing models, such as the widely used Gumbel type copulas, are not adequate to discover the true extremal independencies or dependencies within observed multivariate time series. A new characterization of the tail dependence index between two random variables is developed in this paper. Based on this characterization, a new test statistic, which we call the gamma test (statistic), is proposed. The gamma test effectively detects tail independencies or tail dependencies of all simulation examples, and provides insightful findings of real stock index returns. The gamma test not only tests tail independencies or dependencies between random variables within a random vector, but also tests lag- k tail dependencies within each univariate sequence.

2. **Finance Seminar at the University of Zurich,**

<http://www.nccr-finrisk.unizh.ch/research/financeSeminarZH.htm>

Time: Friday, 14. November 2003, 12.15 13.30

Venue: Room KO2-F-172 University Centre, Entrance Karl Schmid-Strasse 4, Zurich

Speaker: Prof. Oren Sussman, Said Business School, Oxford, U.K.

Please send comments to: PD Dr. Walter Farkas, <http://www.math.ethz.ch/~farkas>

Title: A New Test of Capital Structure

3. Joint Uni Zurich - IFOR/ETH Zurich Research Seminar:

"Quantitative Methods in the Economy",

<http://www.iew.unizh.ch/seminars/quantitativemethods/ws0304/>

Time: Monday, 17.11.03, 16.15 - 18.00

Venue: KO2-F-172 Uni Zentrum

Speaker: Prof. Philipp Schoenbucher, ETH Zurich

Title: "Frailty Models, Contagion and Information Effects"

Abstract: Most of the existing literature on default contagion assumes a direct causal relationship between two obligors' defaults. In contrast to this we show that default contagion can also arise from information effects if investors are imperfectly informed about some common factors affecting the true riskiness of the obligors. We model this effect in a simple extension of the intensity-based modelling framework using unobserved frailty variables.

The default intensities in this model exhibit jumps at default events of other obligors. This entails much higher (and more realistic) levels of default dependence between the obligors than what purely diffusion-based intensity models were able to capture previously, without adding too much additional complexity. The parameters of the dependence can be implied directly from spread jumps observed in the market, thus enabling a full specification of the model under pricing probabilities without recourse to historical default correlations.

We furthermore present two extensions of the model: The first extension shows that the size of the contagion effect can depend on the reason for the default and not just the identity of the defaulted obligor, the second extension exhibits stochastic default correlation.

4. **"Master of Advanced Studies in Finance"**, a joint program of ETH Zurich and Uni Zurich

<http://www.msfinance.ch>

The degree is offered jointly by the ETH Zurich represented by the Department of Mathematics and the University of Zurich represented by the Department of Economics and Business Administration.

The full-time program of advanced studies consists of one year of courses followed by a four-month Master Thesis, possible in connection with a Swiss company. Courses are taught in English by a team of internationally renowned professors of finance and mathematics and by experts from the financial industry.

Deadline for the program starting in October 2004 is 28. February 2004.