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DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

Seminar

Professor Emiliano A. VALDEZ

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University of Connecticut
U.S.A.

will give a talk

entitled

ON THE DISTORTION OF A COPULA AND ITS MARGINS

Abstract

This talk examines the notion of distortion of copulas, a natural extension of distortion within the univariate framework. We study three approaches to this extension: (1) distortion of the margins alone while keeping the original copula structure, (2) distortion of the margins while simultaneously altering the copula structure, and (3) synchronized distortion of the copula and its margins. When applying distortion within the multivariate framework, it is important to preserve the properties of a copula function. For the first two approaches, this is a rather straightforward result, however for the third approach, the proof has been exquisitely constructed in Morillas (2005). These three approaches unify the different types of multivariate distortion that have scarcely scattered in the literature. Our contribution in this talk is to further consider this unifying framework: we give numerous examples to illustrate and we examine their properties particularly with some aspects of ordering multivariate risks. The extension of multivariate distortion can be practically implemented in risk management where there is a need to perform aggregation and attribution of portfolios of correlated risks. Furthermore, ancillary to the results discussed in this talk, we are able to generalize the formula developed by Genest and Rivest (2001) for computing the distribution of the probability integral transformation of a random vector and extend it to the case within the distortion framework. For purposes of illustration, we applied the distortion concept to value excess of loss reinsurance for an insurance policy where the loss amount could vary by type of loss.

Keywords: Multivariate distortion, ordering of risks, probability integral transformation, excess of loss reinsurance.

on

Monday, May 24, 2010

11:00 a.m. – 12:00 noon

at

**Room 524, Meng Wah Complex
(behind the Chong Yuet Ming Amenities Centre)**

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All interested are welcome