澳門大學
UNIVERSIDADE DE MACAU
UNIVERSITY OF MACAU

Faculty of Business Administration

SEMINAR SERIES No. 23/1112
Finance

"GRAM-CHARLIER (G-C) PROCESS AND EQUITY-INDEXED ANNUITIES (EISs)"

Professor Jean-Pierre Chateau

Visiting Professor
Department of Finance and Business Economics
University of Macau

Abstract

A Gram-Charlier distribution has a density that is a polynomial times a normal density. So, regarding the log-price returns in a European call option, we wish to substitute a generalized G-C distribution for the Black-Scholes two-parameter normal distribution. The paper shows that the generalized G-C distribution has to integrate to one, be nonnegative and the degree of its polynomial has to be even. Often used is the G-C density of normalized log returns, which is defined by the elliptical region of the restricted ranges of skewness and excess kurtosis. An exponential change of measure is used to price the European call option under G-C distributions. We next price the G-C European call option embedded in an equity-linked annuity and highlight the effects of skewness and excess kurtosis on the ratchet premium option values. The latter values are then computed with the B-S formula and G-C distributions. The comparison shows that, for both for 4 and 6-parameter G-C distributions, the G-C values are lower than the B-S ones. In short, EIA ratchet premium option prices are significantly affected by varying skewness and/or kurtosis away from their Gaussian values.

Date: **June 5, 2012 (Tuesday)**

Time: **15:00 – 16:30**

Venue: **JM11**

ALL ARE WELCOME!