SEMINAR OF
ACTUARIAL AND FINANCIAL MATHEMATICS

organized by Quantact, the CRM Laboratory of Actuarial and Financial Mathematics

AA-5340
2920, Chemin de la tour, Montréal
Pavillon André-Aisenstadt, Université de Montréal
Friday, February 19, 2016, 14:00-16:30

Daniel Bauer (14:00–15:00)
Associate Professor / New York Life Professor of Insurance
Department of Risk Management and Insurance, Georgia State University
Joint work with Hongjun Ha (Georgia State University)

A Least-Squares Monte Carlo Approach to the Calculation of Capital Requirements

The calculation of capital requirements for financial institutions usually entails a reevaluation of the company's assets and liabilities at some future point in time for a (large) number of stochastic forecasts of economic and firm-specific variables. The complexity of this nested valuation problem leads many companies to struggle with the implementation. Relying on a well-known method for pricing non-European derivatives, the current paper proposes and analyzes a novel approach to this computational problem based on least-squares regression and Monte Carlo simulations. We study convergence of the algorithm and analyze the resulting estimate for practically important risk measures. Moreover, we address the problem of how to choose the regressors, and show that an optimal choice is given by the left singular functions of the corresponding valuation operator. Our numerical examples demonstrate that the algorithm can produce accurate results at relatively low computational costs, particularly when relying on the optimal basis functions.

Frédéric Godin (15:30–16:30)
Professeur adjoint (Assistant Professor)
École d'actuariat, Université Laval

Beyond Delta Hedging

Industry best practices for the hedging of derivatives consist in neutralizing the Greek letters of a derivatives portfolio. Delta hedging which is extensively used in practice is a specific case of this approach. However, many alternative methodologies to hedge derivatives were developed in the literature. The aim of the presentation is to give an overview of those alternative methods which can be used to increase the performance of hedges in terms of risk reduction.

There will be a coffee break from 15:00 to 15:30.

Website: http://quantact.uqam.ca/index_en.html