DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

Public Seminar of PhD Candidate

Mr. CHONG Wing Fung

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will give a talk

entitled

TOPICS IN OPTIMAL REINSURANCE DESIGN, RISK MEASURES, AND FORWARD PERFORMANCE PROCESSES

Abstract

In this talk, three important topics in actuarial science and financial mathematics are discussed, namely, optimal reinsurance design, risk measures, and forward performance processes.

For the first topic, two general problems of optimal reinsurance design are solved. The first one is the minimization of a general functional of the expectation, Value-at-Risk, and Tail Value-at-Risk of the total retained loss with the convex order preserving premium principle and the budget constraint. Karlin-Novikoff-Stoyan-Taylor (multiple) crossing conditions are applied to solve the first general problem. The second problem is the minimization of a general law-invariant coherent risk measure of the total retained loss with the law-invariant coherent premium principle and the budget constraint. Representations in terms of distortion functions, application of the mini-max theorem in the infinite dimensional space, and Neyman-Pearson argument are applied to solve the second general problem.

For the second topic, the forward entropic risk measures are investigated. Under the stochastic factor market model, by making use of the ergodic Backward Stochastic Differential Equation representation of the exponential forward investment performance process, a finite horizon Backward Stochastic Differential Equation representation of the forward entropic risk measure is obtained. By utilizing the finite horizon Backward Stochastic Differential Equation representation of the forward entropic risk measure, the large maturity behavior of the forward entropic risk measure for the risk positions Markovian with respect to the stochastic factor is studied. Specifically, the forward entropic risk measure converges to a constant, which is independent of the initial value of the stochastic factor, with an exponential convergence rate. An example with numerical illustrations is demonstrated.

For the third topic, under the stochastic factor market model, an infinite horizon Backward Stochastic Differential Equation representation of the exponential forward investment and consumption performance process is obtained.

on

Monday, June 5, 2017

4:00 p.m. – 5:00 p.m.

at

Room 301, Run Run Shaw Building

All interested are welcome