Efficient Simulation for Portfolio Credit Risk

Cheng-Der Fuh

Graduate Institute of Statistics

National Central University

Abstract

In this talk, we describe, analyse and evaluate an algorithm for estimating portfolio credit risk. To capture the extreme dependence among obligors, we provide an efficient simulation method for multi-factor models with a normal mixture copula. To this end, we first propose a general account of an importance sampling algorithm based on a two-parameter exponential tilting. Next, by utilizing a fast computational method for how the rare event occurs and the proposed importance sampling method, we provide an efficient simulation algorithm to estimate the probability that the portfolio incurs large losses under the normal mixture copula. Theoretical investigations and simulation studies, which include an empirical example, are given to illustrate the method.

This is a joint work with professor Chuan-Ju Wang.