KATHOLIEKE UNIVERSITEIT LEUVEN

Statistics Seminar

Joint organization by
ORSTAT, Faculty of Business and Economics and the statistics research group,
Faculty of Science
Leuven Statistics Research Center

Prof. Dr. Wolfgang Härdle

Humboldt-Universität zu Berlin, Germany

"Uniform confidence bands for pricing kernels"

Thursday April 29, 2010
12:00—13:00

Location**:** Room HOG **02.101**, Naamsestraat 69, Leuven.
Supporting research project: GOA-project 2007/04

Abstract:

Pricing kernels implicit in option prices play a key role in assessing the risk aversion over equity returns. We deal with nonparametric estimation of the pricing kernel (Empirical Pricing Kernel) given by the ratio of the risk-neutral density estimator and the subjective density estimator. The former density can be represented as the second derivative w.r.t. the European call option price function, which we estimate by nonparametric regression. The subjective density is estimated nonparametrically too. In this framework, we develop the asymptotic distribution theory of the EPK in the L1 sense. Particularly, to evaluate the overall variation of the pricing kernel, we develop a uniform confidence band of the EPK. Furthermore, as an alternative to the asymptotic approach, we propose a bootstrap confidence band.
The developed theory is helpful for testing parametric specifications of pricing kernels and has a direct extension to estimating risk aversion patterns. The established results are assessed and compared in a Monte-Carlo study. As a real application, we test risk aversion over time induced by the EPK.

Joint work with Yarema Okhrin and Weining Wang.