

THE CHINESE UNIVERSITY OF HONG KONG

Department of Statistics

will present a seminar entitled

A New Approach to Singular Stochastic Control in Optimal Hedging and Investment-Consumption under Transaction Costs.

by

Professor Tiong-Wee LIM

Department of Statistics and Applied Probability

National University of Singapore

on

Tuesday, 12 December 2006

2:00 pm – 3:00 pm

in

Lady Shaw Building C1

The Chinese University of Hong Kong

Abstract:

The problems of optimal investment and consumption and of option pricing and hedging in the presence of proportional transaction costs can be formulated as singular stochastic control problems. Up till now, numerical computation of the optimal trading or hedging strategy has been based on the method of Markov chain approximation and discrete-time dynamic programming applied directly to the control problem, which necessitates the comparison of maximum attainable utilities from buying stock, selling stock, or doing nothing. This approach is computationally intensive. In this talk, we propose a new approach. Beginning with a class of singular stochastic control problems that can be transformed to optimal stopping problems, we use the equivalence to optimal stopping to develop an efficient backward induction algorithm. We then use the method of finite differences to modify the backward induction algorithm for much more general stochastic control problems, including those that arise in applications to finite-horizon optimal investment and consumption and to option pricing and hedging in the presence of transaction costs. Specific algorithms and numerical results are provided for these applications.

All are Welcome