

THE UNIVERSITY



OF HONG KONG

Department of Mathematics

Numerical Mathematics and Applied Analysis Group Seminar (NMAA)

Regularity of Value Functions for Nonsmooth Utility Maximization Problems

Professor Harry Zheng
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on Tuesday, November 30, 2010 at 3:00pm
in Room 309, Run Run Shaw Building, HKU

Abstract

In this talk we discuss the existence of a smooth classical solution to the HJB equation for a large class of constrained problems with utility functions that are not necessarily differentiable nor strictly concave.

The value function is smooth if admissible controls satisfy an exponential moment condition or if it is continuous on the closure of its domain.

The key idea is to work on the dual control problem and the dual HJB equation. We construct a smooth, strictly convex solution to the dual HJB equation and show that its conjugate function is a smooth, strictly concave solution to the primal HJB equation satisfying the terminal and boundary conditions.

All are welcome
