Workshop at Roscoff (18-23 March 2010) Study of a mixed optimal stopping and control problem

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(based on a joint work with Tahir Choulli*and Junfeng Ma)

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Abstract

In this talk, the main focus is the study of the same optimal sale problem as in [2]: this consists of the optimization of the (exponential) utility of a portfolio minus a given endowment over all admissible strategies and stopping times. However, contrary to this aforementionned paper, we are able to handle the case when the underlying state price process may have jumps: more precisely and in a markovian setting, we first derive the HJB variational inequality and then characterize explicitely both the optimal strategy and the optimal stopping time. To this end, we relate the mixed control problem to a pure optimal stopping problem. One of the underlying tool is the notion of horizon unbiased utilities, which is also deeply related to dynamic forward utilities and maturity independent risk measures discussed either in [4] or in [5].
In a last part and if time allows, we will describe the structure of the mixed optimization problem in the general case when the price process is a locally bounded semimartingale (this requires in particular some new fine results and also the existence of some minimal Hellinger measure introduced in [1]).

References

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