Power utility maximization problems under partial information and information sufficiency in a Brownian setting

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Extended abstract

We deal with the issue of finding the optimal investment strategy, when trading takes place on a finite interval $[0,T]$ and the quality of the investment is measured by the expected power utility of the related terminal wealth. Moreover, the strategy is based on the investor's observations, which may not include all market information.

We focus on two Brownian models for which we solve the dynamic control problem related to the portfolio optimization explicitly. These models can be seen as particular cases of the semimartingale model treated in [1] admitting a more explicit solution. Indeed, in such cases the solution of the backward stochastic differential equation (BSDE) characterizing the value process related to the problem at issue and given in [1] admits a neat expression.

Following the idea of sufficiency of information given in [2], we discuss the conditions on the models such that the optimal partial observation strategy coincides with the one computed using all market information. Unlike [2],
these conditions turn out to be concrete hypotheses on the Brownian models coefficients.

Keywords
Backward stochastic differential equation; Power utility maximization problem; Information sufficiency.

References
