Quantitative Finance > Portfolio Management

Utility Maximization of an Indivisible Market with Transaction Costs

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This work takes up the challenges of utility maximization problem when the market is indivisible and the transaction costs are included. First there is a so-called solvency region given by the minimum margin requirement in the problem formulation. Then the associated utility maximization is formulated as an optimal switching problem. The diffusion turns out to be degenerate and the boundary of domain is an unbounded set. One no longer has the continuity of the value function without posing further conditions due to the degeneracy and the dependence of the random terminal time on the initial data. This paper provides sufficient conditions under which the continuity of the value function is obtained. The essence of our approach is to find a sequence of continuous functions locally uniformly converging to the desired value function. Thanks to continuity, the value function can be characterized by using the notion of viscosity solution of certain quasi-variational inequality.

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