PORTFOLIO SELECTION WITH DRAWDOWN CONSTRAINT ON CONSUMPTION: A GENERALIZATION MODEL

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ABSTRACT

In this study, we generalize the results of Arun (2013) on the optimal consumption and investment problem of an infinitely lived agent who does not accept her consumption falling below a fixed proportion of her historically highest level, the so-called drawdown constraint on consumption. We extend the results to a general class of utility functions. We use the martingale method to study the dual problem, which involves the choice of a maximum consumption process. The dual problem can be formulated as a two-dimensional singular control problem, with the free boundary depending on a state variable of the maximum process. We establish the duality theorem and provide semi-closed form solutions regarding the optimal strategies. To highlight our methodology, we present some special cases of utility functions that do not allow for the dimension reduction considered in Arun (2013).