Mathematics > Probability

Asymptotics of the probability minimizing a "down-side" risk

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We consider a long-term optimal investment problem where an investor tries to minimize the probability of falling below a target growth rate. From a mathematical viewpoint, this is a large deviation control problem. This problem will be shown to relate to a risk-sensitive stochastic control problem for a sufficiently large time horizon. Indeed, in our theorem we state a duality in the relation between the above two problems. Furthermore, under a multidimensional linear Gaussian model we obtain explicit solutions for the primal problem.

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