Portfolio Selection with Transaction Costs

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Abstract

In this paper, optimal consumption and investment decisions are studied for an investor who has available a bank account paying a fixed rate of interest and a stock whose price is a log-normal diffusion. This problem was solved by Merton and others when transactions between bank and stock are costless. Here we suppose that there are charges on all transactions equal to a fixed percentage of the amount transacted. It is shown that the optimal buying and selling policies are the local times of the two-dimensional process of bank and stock holdings at the boundaries of a wedge-shaped region which is determined by the solution of a nonlinear free boundary problem. An algorithm for solving the free boundary problem is given.

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