Portfolio Selection with Transaction Costs

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Published Online: 1 Nov 1990 | https://doi.org/10.1287/moor.15.4.676

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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Volume 15, Issue 4

November 1990
Pages 573-793

Article Information

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Information

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Cite as

M. H. A. Davis, A. R. Norman, (1990) Portfolio Selection with Transaction Costs. Mathematics of Operations Research 15(4):676-713.

https://doi.org/10.1287/moor.15.4.676

Keywords

Portfolio selection | transaction costs | stochastic control | reflecting diffusions | free boundary problem | local time

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