A Novel Analysis of Entry-and-Exit Investment Decisions

Richard H. Stockbridge
University of Wisconsin Milwaukee

Abstract. A key issue of interest to an investor is the timing of when to buy or sell stock; on a larger scale of an institution or company, the question is one of when to invest in and divest from a line of business. Each decision leads to an optimal stopping problem but since it is possible to invest and divest many times, the task becomes a sequential decision problem. The presentation addresses these types of problems using a novel analysis that arises from recasting them first as infinite-dimensional linear programming problems and from this determining finite-dimensional nonlinear optimization problems. This general approach is advantageous since it requires little regularity on the cost and payoff functions and leads to tractable optimization problems for a variety of stochastic investment models. The focus of this paper will be the analysis of an infinite-period investment model in which the goal is to maximize the discounted reward subject to investment and divestment costs.

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