Risk-sensitive optimal exercise strategies of R&D projects under oligopoly competition

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Abstract

This paper studies the problem of risk--sensitive optimal exercise strategies of an R&D project under an oligopoly competitive market. We model the income stream of the underlying R&D project as a Lévy process, and derive explicit formulas for the optimal exercise threshold that maximizes an investor's risk--sensitized expected utility under the incomplete information duopoly market game. In the second part, we consider more practical situation, in which we incorporate another dimension of uncertainty into the game, that is, an investor not only can't observe the cost function of his opponent directly, but also doesn't know the income stream process parameters exactly. In this circumstance, we characterized the information learning process and solved the market equilibrium problem.

Keywords: *real option, risk-sensitive effect, industry competition, duopoly game, incomplete information, optimal stopping.*

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