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A stochastic control problem with regime switching. (English) Zbl 07445738

Carpathian J. Math. 37, No. 3, 427-440 (2021)

Summary: This paper studies a stochastic control problem with regime switching in a fairly general abstract setting. Such problems may arise from production planning management. We perform a full mathematical analysis of this stochastic control problem via the HJB equation and verification. The connection of the optimal controls and subgame perfect controls is discussed, and it is shown that the optimal controls solve the generalized HJB equation as well. In a special case we provide a closed form solution.

MSC:

35J57 Boundary value problems for second-order elliptic systems
35J47 Second-order elliptic systems
60J70 Applications of Brownian motions and diffusion theory (population genetics, absorption problems, etc.)

Keywords:

stochastic control; HJB equation; generalized HJB equation; partial differential equations; elliptic systems

Full Text: DOI