

# Dividend optimization for jump-diffusion model with solvency constraints

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## Abstract

Belhaj (2010) established that a barrier strategy is optimal for the dividend payment problem under the jump-diffusion model. However, if the optimal dividend barrier level is set too low, then the bankruptcy probability (after a dividend payment) in the near future may be too high to be acceptable. This paper aims to address this issue by taking the solvency constraint into consideration. Precisely, we consider a dividend payment problem with solvency constraint under a jump-diffusion surplus process model. Using involved stochastic control and partial integro-differential equation theories, we derive the optimal dividend payment strategy and the value function of the problem. The optimal dividend barrier level must be put higher if one can not bear the high bankruptcy probability after a dividend payment in the near future.

**Keywords:** Dividend payment, jump-diffusion, solvency constraints, barrier strategy, partial integro-differential equation.