Optimality of Barrier Dividend Strategy in a Jump-diffusion Risk Model with Debit Interest

by

Wei Wangoj Rong Wuoj Jingmin He School of Mathematical Sciences and LPMC, Nankai University 94 Weijin Road,Nankai District, Tianjin,China yulinww@yahoo.com.cn

Abstract

This paper investigates the optimal dividend problem in a jump diffusion risk model with debit interest. In this model, the insurer could borrow money at a debit interest when the surplus turns negative. However, when the negative surplus attains a certain critical level, the business stops and absolute ruin happens at this moment. A sufficient condition under which the optimal dividend strategy is of barrier type is given in such a risk model. Our result relies on the smoothness of certain function arising from this problem and we prove that it is twice continuously differentiable by the probability argument. Finally, we give a numerical example to illustrate our result when the claims are exponentially distributed.

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