On the interface between optimal periodic and continuous dividend strategies in the presence of transaction costs

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Abstract

In the classical optimal dividends problem, dividend decisions are allowed to be made at any point in time - according to a *continuous* strategy. Depending on the surplus process that is considered and whether dividend payouts are bounded or not, optimal strategies are generally of a band, barrier, or threshold type. In reality, while surpluses change continuously, dividends are generally paid on a periodic basis. Because of this, the actuarial literature has recently considered strategies where dividends are only allowed to be distributed at (random) discrete times - according to a *periodic* strategy.

In this paper, we focus on the Brownian risk model. In this context, the optimal continuous and periodic strategies have previously been shown (independently of one another) to be of barrier type. We analyse the interface between continuous and periodic strategies when transaction costs are introduced. In some cases, a *hybrid* strategy proves optimal. In such a strategy, decisions are allowed to be made either at any time (continuously), or periodically at a lower cost. We show under which combination of parameters a pure continuous, pure periodic or hybrid (including both continuous and periodic dividend payments) barrier strategy is optimal. Results are illustrated.

Keywords: Brownian motion, Stochastic control, Dividends, Hybrid strategies, Barrier strategies, Transaction costs
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