CLASSICAL AND IMPULSE STOCHASTIC CONTROL
ON THE OPTIMIZATION OF THE
DIVIDENDS FOR THE TERMINAL BANKRUPTCY MODEL
AND ITS APPLICATION

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ABSTRACT

In this dissertation, I discuss the optimization of dividends of reinsurance companies with the terminal bankruptcy model, in which some money would be returned to shareholders at the state of terminal bankruptcy, meanwhile the tax rate and the fixed transaction cost for each dividend are considered. The mathematical problem of maximizing the summation of expected total discounted dividends before bankruptcy and expected discounted returned money at the state of terminal bankruptcy becomes a mixed classical-impulse stochastic control problem. In order to solve this problem, I reduce it to quasi-variational inequalities with nonzero boundary condition. The main contribution of this dissertation is to explicitly construct and verify solutions of these inequalities, and to consequently present the optimal policy. As an application, the solution of the optimization of dividends under the nonterminal bankruptcy model is provided in the end.