A diffusion model for optimal dividend distribution for a company with constraints on risk control. (English summary) 

The authors consider a stochastic control problem of optimal business activity—find an optimal dividend distribution scheme for a corporation with a liability stream, and with lower and upper constraints on the business activity. The goal is to maximize the expected present value of future dividend payments. To that end the authors assume a very simple diffusion model for the cash reserve dynamics of the company. The derived HJB equation for the value function is one-dimensional (cash reserve is the single variable; there is no time-dependence). In the most complicated case, this HJB ODE can be split into 4 regions: the first region yields a 2nd order linear ODE together with a left boundary condition (1 constant of integration is left undetermined), the second region yields a 2nd order fully nonlinear ODE (2 constants of integration are left undetermined), the third region yields a 2nd order linear ODE (2 constants of integration are left undetermined), and the fourth region yields a very simple 1st order ODE (1 constant of integration is left undetermined). The regions are defined via 3 bordering (unknown) points. So, all together, after integration, there are $1 + 2 + 2 + 1 + 3 = 9$ constants left undetermined. This is balanced (in a complicated fashion) by 9 equations, as a consequence of twice continuous differentiability of the value function (3 conditions at each of the 3 bordering points). The framework and the results are quite interesting, possibly paving the way for future considerations of much more complicated/realistic problems.

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References

8. B. Hjgaard and M. Taksar (1998a), Optimal proportional reinsurance policies for

Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.

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