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Optimal Green Transition for a Firm

I present a stochastic singular control problem that models a firm's optimal transition from Brown to Green technologies. Remaining in the Brown regime generates ongoing costs, while switching entails a proportional investment cost. The firm may distribute dividends but must maintain solvency through capital injections. Using viscosity-solution methods and comparison principles, I characterize the optimal transition policy and show that it is governed by endogenous threshold rules. Numerical experiments illustrate how parameters impact the viability and timing of the transition.