

A mixed singular/switching control problem for a dividend policy with reversible technology investment

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ABSTRACT

We consider a mixed stochastic control problem that arises in Mathematical Finance literature with the study of interactions between dividend policy and investment. This problem combines features of both optimal switching and singular control. We prove that our mixed problem can be decoupled in two pure optimal stopping and singular control problems. Furthermore, we describe the form of the optimal strategy by means of viscosity solution techniques and smooth-fit properties on the corresponding system of variational inequalities. Our results are of a quasi-explicit nature. From a financial viewpoint, we characterize situations where a firm manager decides optimally to postpone dividend distribution in order to invest in a reversible growth opportunity corresponding to a modern technology. In this paper, a reversible opportunity means that the firm may disinvest from the modern technology and return back to its old technology by receiving some gain compensation. The results of our analysis take qualitatively different forms depending on the parameters values.

References

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