

NECESSARY AND SUFFICIENT OPTIMALITY CONDITIONS FOR THE RELAXED CONTROL PROBLEM WITH RISK-SENSITIVE PERFORMANCE

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SUMMARY

We consider a relaxed stochastic control problem with risk-sensitive performance functionals where the set of control domains is not necessary convex, and the system is governed by forward and backward stochastic differential equations. More precisely, we establish necessary as well sufficient conditions of optimality for the relaxed stochastic maximum principle with risk-sensitive control problems, we illustrate our main results by giving an example of application in the mean-variance of cash flow.

Keywords and phrases: Forward Backward stochastic differential equation, Stochastic Maximum principle, Relaxed control, Risk sensitive performance, Variational inequality.

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