OPTIMAL INVESTMENT IN DEFAULTABLE SECURITIES UNDER INFORMATION DRIVEN DEFAULT CONTAGION

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Abstract: We introduce a novel portfolio optimization framework where a power investor decides on optimal portfolio allocations within an information driven default contagion model. The investor can allocate his wealth across several defaultable stocks whose growth rates and default intensities are driven by a hidden Markov chain. The latter acts as a frailty factor introducing dependency across defaults and affecting future comovements of security prices. By a suitable measure change, we reduce the partially observed stochastic control problem to an equivalent fully observed risk-sensitive control problem, where the state is given by the regime filtered probabilities. Using the dynamic programming principle, we then provide a rigorous analysis of default contagion manifested through dependence of the optimal strategies on the gradient of value functions in one-to-one correspondence with the default states of the economy. We prove a verification theorem showing that each value function is recovered as the generalized solution of the corresponding HJB PDE.