Quantile hedging for defaultable claims

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We study the quantile hedging problem for defaultable claims in incomplete markets modeled by Itô processes, in the case where the portfolio processes are adapted to the full filtration. This is a non-standard stochastic control problem and the usual dynamic programming approach cannot be applicable in a trivial way. Thus, in [3, 4], they combine a super-hedging argument with a Neyman-Pearson lemma in the hypothesis testing to reduce the original dynamic problem to a static one. In a complete market framework, the reduced static problem is stated as the testing problem of a single null hypothesis versus a single alternative hypothesis, and so is directly solved by the classical Neyman-Pearson lemma. However, this is not the case in our incomplete markets. To handle this issue, as in [1] and [5], we follow the convex duality approach for the generalized Neyman-Pearson lemma developed in [2].

References


