Advances in
MATHEMATICAL
ECONOMICS

Partial hedging for defaultable claims

Yumiharu Nakano[1][2]

[1] Graduate School of Innovation Management, Tokyo Institute of Technology, 2-12-1 Ookayama, Tokyo 152-8552, Japan
[2] PRESTO, Japan Science and Technology Agency, 4-1-8 Honcho Kawaguchi, Saitama 332-0012, Japan
(e-mail: yumiharu.nakano@gmail.com)

Abstract. The subject of this paper is the problems of finding optimal hedging portfolios for defaultable claims in incomplete markets modeled by Itô processes, in the case where the portfolio processes are adapted to the full filtration. Two kinds of optimizations are considered: the maximization of the probability of super-hedge and the minimization of the expected discounted loss of hedging. We combine a super-hedging argument with Neyman–Pearson lemma in the hypothesis testing to reduce the original dynamic problems to static ones. The convex duality method as in Cvitanic and Karatzas (Bernoulli 7:79–7, 2001) plays a key role to solve the reduced problems.

Key words:hedging, defaultable claims, convex duality, Neyman–Pearson lemma, jump processes