Pricing options under uncertain volatility a BSDE with constrained jumps approach

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Abstract

We propose a probabilistic numerical scheme to solve Backward Stochastic Differential Equations (BSDEs) with constrained jumps, a class of BSDEs introduced in [6] for representing fully nonlinear HJB equations. In particular, this allows to numerically solve stochastic control problems with controlled volatility. A partial analysis of the error of the scheme is provided, as well as numerical tests on the problem of superreplication of option with uncertain volatilities and/or correlations, including a detailed comparison with the numerical results from the alternative scheme proposed in [5].