Hedging expected loss on derivatives in electricity Futures markets

Adrien Nguyen Huu IMPA (Rio, Br) FiME (Paris, Fr)

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We consider the practical problems of managing risks on electricity markets, by taking the situation of an agent endowed with a derivative on an asset that is non-yet quoted. The situation is common on the Futures market. With structurally correlated assets, we develop a partial hedging strategy in order to control the expected level of loss under a given threshold *p*. We express the problem in its stochastic target formulation (Soner and Touzi, 2002), but must separate the problem into a complete market setting (when the underlying asset is available) and an incomplete market one (when it is not). We recall the setting of Bouchard and al. (2009) and extend their application (quantile hedging) to a convex loss function when the market is complete. The incomplete market is dealt in two steps. First a face-lifting procedure allows to retrieve a complete market setting, and link the stochastic target problem to a classical optimal control problem. Then, the augmented numerical difficulty is tackled with a probabilistic numerical procedure inspired by the coupled expectation-diffusion representation of the HJB equation derived from the control problem. Numerical results are provided.

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