FP7 Marie Curie ITN "Controlled systems" project

Spring School "Stochastic Analysis in Finance"

Roscoff, 6-15 March 2012

Professor Bruno BOUCHARD

Pricing and hedging under risk constraints: the stochastic target point of view

Abstract: In this lecture, we shall review recently developed approaches for risk pricing and hedging problems based on a stochastic target formulation. We will start by showing that it allows to characterize super-hedging prices in term of suitable Hamilton-Jacobi-Bellman equations, for a very large class of financial models (even if no dual formulation can be established). We will then explain how quantile hedging and expected loss pricing problems can be embedded into this framework, leading to the notion of stochastic target problems with controlled loss. We shall finally discuss a robust pricing approach based on a game version of the above non standard control problems.