Asymptotic non-linear continuous-time valuation with hedging and dissymetric risk function

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In practice, the discrete hedging produces a residual risk. Our purpose is to determine the valuation/hedging rules that minimize this risk as the number of trading dates increases to infinity. We consider a risk function penalizing differently profits and losses and having a discontinuous second derivative. We solve a slightly modified problem in a Markovian complete market framework. We characterize the optimal valuation/hedging policy through a fully nonlinear PDE with a non-linearity described by f. Finally, we show the numerical solution for the optimal $f^\star$.

References

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