

The impact of uncertainties on the pricing of contingent claims

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(Submitted on 28 Jan 2010)

We study the effect of parameters uncertainties on a stochastic diffusion model, in particular the impact on the pricing of contingent claims, thanks to Dirichlet Forms methods. We apply recent techniques, developed by Bouleau, to hedging procedures in order to compute the sensitivities of SDE trajectories with respect to parameter perturbations. We show that this model can reproduce a bid-ask spread. We also prove that, if the stochastic differential equation admits a closed form representation, also the sensitivities have closed form representations. We exhibit the case of log-normal diffusion and we show that this framework foresees a smiled implied volatility surface coherent with historical data.

Subjects: **Pricing of Securities (q-fin.PR)**

Cite as: [arXiv:1001.5202v1](https://arxiv.org/abs/1001.5202v1) [q-fin.PR]

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