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Some contributions to sequential Monte Carlo methods for option pricing

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densities over time. In particular, we approximate the optimal importance sampling distribution in the SMC algorithm by using a sequence of weighting functions. This is demonstrated on two examples, barrier options and target accrual redemption notes (TARNs). We also provide a proof of unbiasedness of our SMC estimate.

KEYWORDS: Diffusions sequential Monte Carlo option pricing

AMS SUBJECT CLASSIFICATION: 91G60 (primary) 65C05 (secondary)

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

1. We have a slight abuse of notation in the above, wherein we have used μ(n,Sn) and σ(n,sn) to denote μ(tn,Rtn) and σ(tn,Rtn) respectively.

2. If μ is a constant other than 0, then it is trivial to extend the methods we propose. If it is a fu in the local volatility

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