Shorokhov S. G. (Moscow, Russia) — **On option prices in some local volatility models.**

We study european option pricing problem in local volatility models, when asset dynamics is given by stochastic differential equation $dS_t = r\,S_t\,dt + \sigma\,(S_t, t)\;S_t\,dW_t$, $S\,(t_0) = S_0 > 0$, with volatility σ being a function of asset price S_t and time t. Basically, the problem of european option pricing reduces to determination of transition probability density function via initial value problem with delta function for Fokker-Planck partial differential equation and consequent calculation of option prices, which satisfy Black-Scholes-Merton partial differential equation with corresponding boundary conditions. Analytic formula for european call option price enables us to recover the volatility function by Dupire formula.

We outline both well-known local volatility models [1] and some new local volatility models, related to nonlinear partial differential equation for volatility function from [2]. Application of local volatility models in derivative pricing and in assessing market [3] and credit [4] risks is discussed.

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