Calibration of Hybrid Model and Arbitrage-Free Implied Volatility Surface

Authors : Kun Huang

Abstract : This paper investigates whether the combination of local and stochastic volatility models can be calibrated exactly to any arbitrage-free implied volatility surface of European option. The risk neutral Brownian Bridge density is applied for calibration of the leverage function of our Hybrid model. Furthermore, the tails of marginal risk neutral density are generated by Generalized Extreme Value distribution in order to capture the properties of asset returns. The local volatility is generated from the arbitrage-free implied volatility surface using stochastic volatility inspired parameterization.