Journal of Futures Markets / Volume 26, Issue 5 / pp. 417-448

Research Article

A non-lattice pricing model of American options under stochastic volatility

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First published: 23 March 2006

https://doi.org/10.1002/fut.20207

Abstract

In this article, an analytical approach to American option pricing under stochastic volatility is provided. Under stochastic volatility, the American option value can be computed as the sum of a corresponding European option price and an early exercise premium. By considering the analytical property of the optimal exercise boundary, the formula allows for recursive computation of the American option value. Simulation results show that a nonlattice method performs better than the lattice-based interpolation methods. The stochastic volatility model is also empirically tested using S&P 500 futures options intraday transactions data. Incorporating stochastic volatility is shown to improve pricing, hedging, and profitability in actual trading. © 2006 Wiley Periodicals, Inc. Jrl Fut Mark 26:417–448, 2006

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