

A Comparison Study on Hedging Methods of Barrier Options

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Abstract

A comparison study on hedging methods of barrier options is conducted in this work. The hedging performance of the strike-spread, calendar-spread, unified and modified strike-spread hedging strategies are investigated under the Black-Scholes model. Simulation results indicate that the modified strike-spread approach provides superior hedging performance when taking into account transaction costs. The modified strike-spread method is thereby extended to the GARCH framework. An efficient scheme based on the continuous GARCH model and the Brownian bridge is proposed to generate the first hitting time of the GARCH-type dynamics. Numerical results show that the modified strike-spread approach still has a promising performance for hedging barrier options in GARCH models.

Keywords: barrier option, calendar-spread, first hitting time, GARCH model, static hedging, strike-spread.