Black-Scholes delta hedging option position for heavy tailed returns

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Abstract

In this talk, we examine the Black-Scholes delta hedging option positions when the log returns of the underlying assets possess heavy tailed distributions. The implied volatility derived from the B-S model is shown to possess volatility smile property. The absolute values of the Black-Scholes deltas are proved to be higher for deep out-of-money options, while are lower for deep in-the-money options, and are close for near-the-money options. Simulation study is performed for underlying assets follow   GARCH(1,1) processes .