

Option pricing via Monte Carlo simulation

The presented results compare Monte Carlo estimates using Euler and Milstein schemes with theoretical Black-Scholes prices for European and digital call options. For the European call option, the simulated prices approach the Black-Scholes price as the number of simulation paths increases, accompanied by decreasing standard errors, indicating greater accuracy with larger sample sizes. Similarly, for the digital call option, Monte Carlo estimates converge towards the Black-Scholes price with increasing paths, demonstrating the effectiveness of both schemes in approximating option values under Black-Scholes dynamics.