

This study proposes an empirical martingale simulation (EMS) and an empirical P-martingale simulation (EPMS) price estimators for multi-asset financial derivatives. Under mild assumptions on the payoff functions, the strong consistency and asymptotic normality of the proposed estimators are established. Several simulation scenarios are conducted to investigate the performance of the proposed price estimators under multivariate geometric Brownian motion, multivariate GARCH models, multivariate jump-diffusion models and multivariate stochastic volatility models. Numerical results indicate that the multi-asset EMS and EPMS price estimators are capable of improving the efficiency of their Monte Carlo counterparts. In addition, the asymptotic distribution serves as a persuasive approximation to the finite-sample distribution of the EPMS price estimator, which helps to reduce the computation time of finding confidence intervals for the prices of multi-asset derivatives.