

Advanced Computational Methods for Bayesian Financial Models

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Abstract

An important aspect of modern financial statistics is the exploration of the potential patterns and predictability of financial data. The development of various statistical models, such as the Black-Scholes model and the Stochastic Volatility models, bring the inferences and predictions closer to the empirical reality. This project aims to explore Bayesian versions of the financial models for equity data. In order to make inferences for parameters in the models and thereby make predictions, we adopt computational methods to fit the models to real data. In particular, Markov Chain Monte Carlo simulation algorithm is used to fit statistical models to real equity data and thereby estimate volatilities and make predictions based on the fitted model. The two models of focus are the Black-Scholes model and the standard Stochastic Volatility model.