Abstract

The Ornstein-Uhlenbeck process has countless practical applications most of which rely on having previously estimated the drift parameter. The literature offers two basic estimators - the least-squares estimator, which coincides with the maximum-likelihood estimator for Ornstein-Uhlenbeck process, and the method-of-moments estimator. However, the similarity in asymptotic properties of these estimators means that choosing which one to use is more of a random guess than an educated decision. This thesis focuses on finding differences between the two estimators when applied to the Ornstein-Uhlenbeck trajectories generated in R. The simulation study performed suggests that the method-of-moments is better suited when the initial condition is close to zero even if the observations are collected sparsely. On the other hand, the precision of the least-squares estimator is better when the initial condition is further away from zero, but it still requires having dense data points. Under the conditions of this study, the least-squares estimator performs better compared to the method-of-moments if the absolute value of the initial condition is large. On the other hand, the method-of-moments is superior in cases where we have infrequent observations and long time horizon.