Title
Volatility Forecasting of Financial Time Series By Using Ornstein-Uhlenbeck Type Models.

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Abstract
In this work, we discuss a statistical technique to estimate the volatility of a financial time series by using an Ornstein-Uhlenbeck type models. Using the daily closing prices from developed and emergent stock markets, we conclude that the incorporation of stochastic volatility into the time-varying parameter estimation improves the forecasting performance via Maximum Likelihood Estimation (MLE). A class of stochastic differential equation arising on the superposition of two independent Gamma Ornstein-Uhlenbeck processes is used to simulate the time series data in a special case where the MLE does not fit the original data. The simulated data mimics the original financial time series, which is observed from the estimates of the root mean square error. Furthermore, the stochastic model exhibits the physical and long memory behavior of the data. We also conclude that the Ornstein-Uhlenbeck type models used in this study guarantees the convergence of the MLE technique, which makes the estimation algorithm feasible with large data sets and facilitate prediction.