Efficient Estimation of High Frequency Integrated Volatility

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Abstract

Estimation of the integrated volatility is an important problem for high frequency financial data analysis. In this study, we propose a minimum variance unbiased estimator of integrated volatility for stochastic volatility model with microstructure noise. Asymptotic normality of the proposed estimator is obtained with convergence rate $O_p(n^{-1/4})$ which achieves the optimal rate of the maximum likelihood estimator in constant volatility case. An unbiased estimator of the microstructure noise variance is also proposed to facilitate the estimation procedure. Simulation studies are performed to confirm the theoretical results and to compare the proposed estimator with the other estimators proposed in the literatures.