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*On Quasi-Maximum Likelihood Approach for Integrated Covariance Matrix Estimation with High Frequency Data.*

Estimating the integrated covariance matrix (ICM) from high frequency financial trading data is crucial to reflect the volatilities and covariations of the underlying trading instruments. Such an objective is difficult due to contaminated data with microstructure noises, asynchronous trading records, and increasing data dimensionality. We study a quasi-maximum likelihood (QML) approach for estimating an ICM from high frequency financial data. We explore a novel multivariate moving average time series device that is convenient for evaluating the estimator both theoretically for its asymptotic properties and numerically for its practical implementations. We demonstrate that the QML estimator is consistent to the ICM, and is asymptotically normally distributed. Efficiency gain of the QML approach is theoretically quantified, and numerically demonstrated via extensive simulation studies. (Received January 18, 2015)