Bayesian analysis of Multivariate Stochastic Volatility models

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Abstract

Multivariate stochastic volatility (MSV) models have gained applicability in Time Series (TS) data for analyzing multivariate financial and economic time series because they capture the volatility dynamics. Bayesian prior works allow analysis of MSV models to provide parsimonious skew structure and to easily scale up for high-dimensional problem. Bayesian MCMC estimation are used for high dimensional problems because it's a very efficient estimation method, however, it is associated with a considerable computational burden when the dimensionality of the data is moderate to large. Forward-filtering backward-sampling (FFBS) algorithm by sampling is used as it considers reparameterizations. This is applied directly to heteroscedasticity estimation for latent variables. To show the effectiveness of this approach, we apply the model to a vector of daily exchange rate data from Central Bank of Kenya.