A Note on Efficient Fitting of Stochastic Volatility Models

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Abstract

The stochastic volatility model is a popular tool for modeling the volatility of assets. The model is a nonlinear and non-Gaussian state space model and presents some challenges not seen in general. Many approaches have been developed for Bayesian analysis that rely on numerically intensive techniques such as Markov chain Monte Carlo (MCMC). Convergence and mixing problems still plague MCMC algorithms used for the model. We present an approach that ameliorates the slow convergence and mixing problems when fitting stochastic volatility models. The approach accelerates MCMC by exploiting the geometry of one of the targets. We demonstrate the method on various numerical examples.