

# Bayesian analysis of stochastic volatility model and quantile regression using asymmetric Laplace error via uniform scale-mixtures

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## Abstract

This paper proposes a new scale mixture of uniform (SMU) representation for the asymmetric Laplace distribution (ALD). The use of the SMU for a probability distribution is a data augmentation technique that simplifies the Gibbs sampler of the Bayesian Markov chain Monte Carlo algorithms. We consider a stochastic volatility (SV) model with an ALD error distribution. The full conditional distributions for the Gibbs sampler are shown to have closed forms. It is also known that the ALD can be used to obtain the coefficients of quantile regression models. This paper also considers a quantile SV model by fixing the skewness parameter of the ALD at specific quantile level. Simulation study shows that the proposed methodology works well in both SV and quantile SV models using Bayesian approach. In the empirical study, we analyse exchange rate data.