

# Bayesian Quantile Regression in Stochastic Frontier Models

Ralph Silva (UFRJ), Angel Arroyo Hinostroza (UFRJ), Helio dos Santos Migon (UFRJ)

## **Resumo/Abstract:**

We present a new class of models that combines the power of Bayesian quantile regression and stochastic frontier models. Compared with the classical modeling of stochastic frontier model in the conditional mean, our proposal inherits the advantages of quantile regression, such as robustness, no need to assume any distribution to the data nor assume homoscedasticity, and also a broader scope - several quantiles provides a better understanding of a firm's production output. The modeling uses the asymmetric Laplace distribution whose normal-exponential mixture representation enables an easy-to-code Gibbs sampling as well as efficient. A Monte Carlo study is presented to empirically evaluate the methodology for Bayesian quantile regression. Applications of our proposals are presented for cross-sectional and panel data sets. We compare the results obtained from our proposal with those obtained using conditional mean regression (classical estimation).