

Recent development in Bayesian Stochastic Frontier Model for efficiency analysis

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Abstract

Recently, a skew-normal based stochastic frontier model has emerged as a promising tool for efficiency analysis. This talk introduces a Bayesian framework for statistical inference, integrating both informative and non-informative prior knowledge to estimate parameters of skew-normal distributions in stochastic frontier models. Through comprehensive evaluation using both simulation data and real data from a manufacturing productivity study, we demonstrate that the Bayesian approach provides more stable and accurate parameter estimates compared to the conventional maximum likelihood method. The results from both simulated and empirical analyses clearly highlight the superior performance of the Bayesian methodology, offering enhanced robustness and precision in estimating efficiency scores, thus contributing significantly to the advancement of stochastic frontier modeling.