



4,116

Views

331

CrossRef citations to date

3

Altmetric

Original Articles

# Gibbs sampling methods for Bayesian quantile regression

Hideo Kozumi  & Genya Kobayashi

Pages 1565-1578 | Received 27 Jul 2009, Accepted 23 May 2010, Published online: 17 Mar 2011

 Cite this article  <https://doi.org/10.1080/00949655.2010.496117>

Sample our  
Computer Science  
Journals



>> **Sign in here** to start your access  
to the latest two volumes for 14 days

 Full Article

 Figures & data

 References

 Citations

 Metrics

 Reprints & Permissions

Read this article

 Share

## Abstract

This paper considers quantile regression models using an asymmetric Laplace distribution from a Bayesian point of view. We develop a simple and efficient Gibbs sampling algorithm for fitting the quantile regression model based on a location-scale mixture representation of the asymmetric Laplace distribution. It is shown that the resulting Gibbs sampler can be accomplished by sampling from either normal or generalized inverse Gaussian distribution. We also discuss some possible extensions of our approach, including the incorporation of a scale parameter, the use of double exponential prior, and a Bayesian analysis of Tobit quantile regression. The proposed methods are illustrated by both simulated and real data.

Keywords:

## Acknowledgements

The authors are grateful to an associated editor and two anonymous referees for their useful comments, which improved an earlier version of the paper. This research is partly supported by Grants-in-Aid for Scientific Research from the Ministry of Education, Culture, Sports, Science and Technology of Japan. The computational results are obtained using Ox version 5.10 [34](#).

### Related Research Data

[Non-Gaussian Ornstein–Uhlenbeck-based Models and Some of Their Uses in Financial Economics](#)

Source: Journal of the Royal Statistical Society Series B (Statistical Methodology)

[Regression Quantiles](#)

Source: Econometrica

[An Alternative Estimator for the Censored Quantile Regression Model](#)

Source: Econometrica

[Bootstrapping Quantile Regression Estimators](#)

Source: Econometric Theory

[Markov Chain Monte Carlo Methods: Computation and Inference](#)

Source: Unknown Repository

[An Easily Implemented Generalised Inverse Gaussian Generator](#)

Source: Communications in Statistics - Simulation and Computation

[Censored regression quantiles](#)

Source: Journal of Econometrics

## Related research

People also read

Recommended articles

Cited by  
331

## Information for

Authors  
R&D professionals  
Editors  
Librarians  
Societies

## Opportunities

Reprints and e-prints  
Advertising solutions  
Accelerated publication  
Corporate access solutions

## Open access

Overview  
Open journals  
Open Select  
Dove Medical Press  
F1000Research

## Help and information

Help and contact  
Newsroom  
All journals  
Books

## Keep up to date

Register to receive personalised research and resources by email



Sign me up



Copyright © 2025 Informa UK Limited [Privacy policy](#) [Cookies](#) [Terms & conditions](#)

[Accessibility](#)

 Taylor and Francis Group

Registered in England & Wales No. 01072954  
5 Howick Place | London | SW1P 1WG