



THE UNIVERSITY OF  
CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

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Threshold Estimation for Linear Regression Model Using Reversible  
Jump Markov Chain Monte Carlo

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#### ABSTRACT

Green (1995) proposed reversible jump Markov chain Monte Carlo, referred to as RJMCMC, which solves the restrictions of other MCMC methods that the joint distributions of all variables in a model should have the same dimension. Hence, they have not been used for applications to Bayesian choice between models with different numbers of parameters. Reversible jump algorithm, however, allows Bayesian computation to jump between parameter subspaces of differing dimensionality, and thus it gives the best dimensionality and the optimal model with respect to certain data. This paper proposes the application of reversible jump Markov chain Monte Carlo methodology to threshold models to estimate a critical or threshold value in the linear regression model. This advanced method gives more information, such as the distribution of the threshold value, than any other methods, such as likelihood ratio test, Akaike information criterion (AIC), Bayesian information criterion (BIC), and Bayes factors, to estimate the threshold value.

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