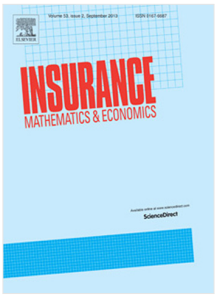
Accepted Manuscript



Bayesian ratemaking with common effects modeled by mixture of Polya tree processes

Jianjun Zhang, Chunjuan Qiu, Xianyi Wu

PII: S0167-6687(17)30178-6
DOI: https://doi.org/10.1016/j.insmatheco.2018.06.007
Reference: INSUMA 2475

To appear in: *Insurance: Mathematics and Economics*

Received date : April 2017
Revised date : April 2018
Accepted date : 15 June 2018

Please cite this article as: Zhang J., Qiu C., Wu X., Bayesian ratemaking with common effects modeled by mixture of Polya tree processes. *Insurance: Mathematics and Economics* (2018), https://doi.org/10.1016/j.insmatheco.2018.06.007

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Bayesian Ratemaking with Common Effects Modeled by Mixture of Polya Tree Processes*

Jianjun Zhang, Chunjuan Qiu† and Xianyi Wu

School of Statistics, East China Normal University

Abstract

In classical models for Bayesian ratemaking, claims are usually assumed to be independent over risks. However, this assumption may be violated because there are situations that could derive possible dependence among the insured individuals. This paper aims to investigate the typical problem of experience ratemaking to account for a special type of dependence that is known as common effects in the literature. Polya tree processes are employed to model the common effects and, by means of an MCMC scheme, the corresponding Bayesian premiums are numerically computed. This provides a useful alternative to the well known results on Bayesian ratemaking with common effects.

Keywords: *Bayesian nonparametrics, Common effects, Credibility models, Experience ratemaking, MCMC and Polya tree process.*

1 Introduction

One of the most important tasks for actuaries is to determine adequate premiums for risks to be insured under certain premium principles derived from economical and operational considerations, to reflect the distributional features of the risks. These considerations may be choice

*This work was partially supported by the National Social Science Foundation Key Program under grant No. 17ZDA091, Shanghai Philosophy and Social Science Foundation under grant No. 2015BGL001, NSFC under grant No. 71771089 and the 111 Project under grant No. B14019.

†Corresponding to: cjqiu@stat.ecnu.edu.cn

Download English Version:

https://daneshyari.com/en/article/7354544

Download Persian Version:

https://daneshyari.com/article/7354544

Daneshyari.com