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论文

广义变系数模型的Bayesian B样条估计

卢一强(1), 茆诗松(2)

(1)解放军信息工程大学电子技术学院,郑州 450004;(2)华东师范大学统计系,上海 200062

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摘要 提出了广义变系数模型函数系数的一种新的估计方法.

我们用B样条函数逼近函数系数,不具体选择节点

的个数,而是节点个数取均匀的无信息先验,样条函数系数取正态先验,

用Bayesian模型平均的方法估计各个函数系数.

这种估计方法一个主要特点是允许各个函数系数所需节点个数的后验分布不同, 因此允许

不同函数系数使用不同的光滑参数. 另外,本文还给出了Bayesian B

样条估计的计算方法,并通过模拟例子,

说明广义变系数模型的函数系数可以由Bayesian B

样条估计方法得到很好的估计.

关键词 广义变系数模型 Bayesian模型平均 B样条

分类号

Bayesian B-Spline Estmation Of The Generalized Varying-Coefficient Models

Lu Yiqiang(1),Mao Shisong(2)

(1)Institute of Electronic Technology, the PLA Information Engineering University, Zhengzhou 450004;
(2)Department of Statistics, East China Normal University, Shanghai 200062

Abstract This article presents a new approach of estimating generalized varying-coef-ficient models. The functional coefficients are approximated by B-spline functions. We do not select the number of the knots, but use the uniform noninformative prior estimation instead. The prior estimation of the coefficients of the B-spline functions is taken as normal distribution. The functional coefficients are estimated by the methods of the Bayesian model averaging. The advantage of this methods is that the smoothing parameter of each functional coefficient is admitted to be different because of the different posterior estimations of the knot number. In addition, the algorithm of Bayesian B-spline estimation is also given. The simulated examples show that the functional coefficients of the generalized varying-coefficient model are well estimated by Bayesian B-spline methods.

Key words Generalized varying-coefficient models Bayesian model averaging B-spline function Laplace's appro

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通讯作者