

核实数据下响应变量缺失的线性EV模型经验似然推断

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摘要 考虑响应变量随机缺失而协变量带有误差的线性模型,借助于核实数据和借补方法,构造了回归系数的两种经验似然比,证明了所提出的估计的经验对数似然比渐近于一个自由度为1的独立 χ^2 变量的加权和;而经调整后所得的调整经验对数似然比渐近于自由度为 p 的 χ^2 分布,该结果可以用来构造未知参数的置信域.此外,我们也构造了响应均值的调整经验对数似然比统计量,并证明了所提出的统计量渐近于 χ^2 分布,可用此结果构造响应均值的置信域.通过模拟研究比较了置信域的精度及其平均区间长度.

关键词 [线性EV模型](#),[经验似然](#),[核实数据](#),[缺失数据](#),[置信域](#).

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Empirical Likelihood Inference of Linear Errors-in-Variables Models Under Validation Data for Missing Response Data

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Abstract In this paper, linear errors-in-covariables models are considered in the presence of missing data on the responses. Two empirical log-likelihood ratio statistics for the unknown regression coefficients are constructed with the help of validation data and the imputation methods. The estimated empirical log-likelihood is proved to be asymptotically distributed as a weighted sums of independent chi-square random variable with 1 degree of freedom and the adjusted empirical log-likelihood is shown to be asymptotically distributed as chi-square with p degree of freedom, and hence they can be used to construct the confidence region of the parameter. In addition, an adjusted empirical likelihood approach to inference on the mean of the response variable is developed. It is shown that the proposed statistics have the asymptotic chi-square distribution, and the corresponding empirical likelihood confidence interval for the mean is constructed. A simulation study is conducted to compare the proposed methods in terms of coverage accuracies and average lengths of the confidence intervals.

Key words [Linear errors-in-variables model](#) [empirical likelihood](#) [validation data](#) [missing data](#) [confidence region](#).

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