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Misspecification test for random effects in generalized linear finite-mixture models for clustered binary and ordered data[☆]

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Abstract

An alternative to using normally distributed random effects in a generalized linear mixed model for clustered data is based on assuming discrete random effects. This approach gives rise to a flexible class of finite-mixture models for multilevel and longitudinal data. A general Hausman-type misspecification test is proposed for these models based on the comparison between the marginal and the conditional maximum likelihood estimators of the regression parameters, focusing on the case of binary and ordered response variables. The test is simple to perform and it is particularly useful in detecting the possible correlation between the random effects and individual covariates, a situation often faced by practitioners and that causes severe inconsistency. This type of dependence is accounted for by suitable extensions of classical finite-mixture models. The approach is illustrated by a series of simulations and two empirical examples covering important fields of application.

[☆]The proposed test is implemented by means of a set of R functions that are available, together with the code to run the illustrative examples, at https://sites.google.com/site/bartstatistics/codes&data_EconStat.zip.

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