ROBUST INFERENCE IN A HETEROSEDASTIC
MULTILEVEL LINEAR MODEL
WITH STRUCTURAL CHANGE

by

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ABSTRACT

We estimate a multilevel model with cross-sectional interactions in higher and lower levels with structural change by a hybrid of the forward search algorithm preceding bootstrap method. The simulation study exhibits the ability of the hybrid procedure to produce narrower confidence interval even when there is misspecification error and structural change. Moreover, it has a comparable predictive ability with the classical restricted maximum likelihood (REML) estimation. The hybrid method however, yield estimates of the parameters with lower bias relative to REML. The hybrid of forward search and bootstrap method can further robustify estimates of fixed and random coefficients under various levels of interaction effect or in the presence of temporary structural change in a multilevel model.

Keywords: Forward Search Algorithm, Robust Statistics, Multilevel Models, Bootstrap, Interclass Correlation