A study on the distribution of the residual in the Growth Curve Model

Jianxin Wei[1], Ying Li[2] and Dietrich von Rosen[2,3]

[1] *Uppsala University, Sweden, email: jianxin.wei@statistik.uu.se*
[2] *Swedish University of Agricultural Sciences, Sweden, email: ying.li@slu.se*
[3] *Linköping University, Sweden, email: dietrich.von.rosen@slu.se*

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The Growth Curve Model was introduced by Potthoff & Roy (1964). The maximum likelihood estimators of the parameters in the model have been obtained. The study of the properties of the estimators has taken place over many years. However, the distributions of the residuals are still unknown and are interesting to consider from both, a theoretical and a practical point of view. In this paper, the approximation of the distribution of the residuals in the Growth Curve Model is derived via Edgeworth expansions and by aid of bootstrap methodology. A simulation study is included to verify the results, and further to compare the MLE and least square estimator in the growth curve model.

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