A REVIEW OF NORMAL NONLINEAR MODELS

Gauss Moutinho CORDEIRO[1]
Andrea Andrade PRUDENTE[1]
Clarice Garcia Borges DEMÉTRIO[2]

- *ABSTRACT: The normal nonlinear models continue to have a special treatment in theoretical and applied statistics even after the introduction of the generalized linear models. The normal nonlinear models are applied to several fields such as econometrics, agriculture, pharmacology, biology, engineering, education, chemistry, etc. Their main properties are derived from theoretical assumptions and their parameters are in general interpretable. Unlike linear models, the adequacy of the fitting of the normal nonlinear models are evaluated not only by means of the diagnostic techniques, but also by extending the nonlinear behavior. Models with nonlinear behavior far away from the linear structure may lead to asymptotic results which do not hold in situations where small samples are used. In this article we review the estimation and the main diagnostic techniques and measures of nonlinearity. Applications are performed to the analysis of real data sets.*

- *KEYWORDS: Bias correction; diagnostic analysis; measures of curvature; normal nonlinear models; projected residual.*

[1] Departamento de Estatística e Informática -- DEINFO, Universidade Federal Rural de Pernambuco -- UFRPE, CEP: 50171-900, Recife, Pernambuco, Brasil. E-mail: *gauss@deinfo.ufrpe.br / deaprudente@gmail.com*

2 Departamento de Ciências Exatas, Escola Superior de Agricultura Luiz de Queiroz - ESALQ, Universidade de São Paulo - USP, Caixa Postal 9, CEP: 13418-900, Piracicaba, SP, Brazil. E-mail: *clarice@esalq.usp.br*