The Extended-Quasi-Likelihood-Function in Generalized Linear Models

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The *Generalized Linear Model (GLM)* is an extension of the *Linear Model*. As opposed to a Linear Model, a GLM does not only allow for the usage of the normal distribution, but for all distributions from the exponential family. Estimators of the coefficients of a GLM are determined completely by the specification of the first two moments. Thus, a natural extension is to use a *quasi-likelihood* approach (McCullagh, 1983), where one does not specify the whole distribution, but the functional relationship between the mean μ and the variance, as expressed by the variance function $\operatorname{var} Y \propto V(\mu)$. Nelder and Pregibon (1987) introduce the *Extended Quasi-Likelihood function (EQL function)* which, inter alia, permits comparisons between different variance functions.

An R library which allows for the estimation of the parameters of a family of variance functions by means of the EQL function is now available.

References

McCullagh, P. (1983). Quasi-likelihood functions. *The Annals of Statistics*, *11*, 59–67.

Nelder, J. A., & Pregibon, D. (1987). An extended quasi-likelihood function. *Biometrika*, *74*, 221–232.