SCORE TEST IN ROBUST M-PROCEDURE

Shahjahan Khan[1]

School of Agricultural, Computational and Environmental Sciences
International Centre for Applied Climate Science
University of Southern Queensland, Toowoomba, Australia
Email: shahjahan.khan@usq.edu.au

Rossita M Yunus

Institute of Mathematical Sciences, Faculty of Sciences,
University of Malaya, Kuala Lumpur, Malaysia.
Email: rossita@um.edu.my

SUMMARY

A score type test based on the M-estimation method for a linear regression model is more reliable than the parametric based-test under mild departures from model assumptions, or when dataset has outliers. An R-function is developed for the score M-test, and applied to two real datasets to illustrate the procedure. The asymptotic power function of the M-test under a sequence of (contiguous) local alternatives is derived. Through computation of power function from simulated data, the M-test is compared with its alternatives, the Student's *t* and Wilcoxon's rank tests. Graphical illustration of the asymptotic power of the M-test is provided for randomly generated data from the normal, Laplace, Cauchy, and logistic distributions.

Keywords and phrases: Robust inference, M-test, Student's *t* test, rank test, asymptotic power, and contiguity.

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