

Estimating nonlinear regression with and without change-points by the LAD method

Gabriela Ciuperca

Received: 4 February 2008 / Revised: 27 January 2009 / Published online: 28 July 2009
© The Institute of Statistical Mathematics, Tokyo 2009

Abstract The paper considers the least absolute deviations estimator in a nonlinear parametric regression. The interest of the LAD method is its robustness with respect to other traditional methods when the errors of model contain outliers. First, in the absence of change-points, the convergence rate of estimated parameters is found. For a model with change-points, in the case when the number of jumps is known, the convergence rate and the asymptotic distribution of estimators are obtained. Particularly, it is shown that the change-points estimator converges weakly to the minimizer of given random process. Next, when the number of jumps is unknown, its consistent estimator is proposed, via the modified Schwarz criterion.

Keywords Asymptotic properties · Change-point · LAD estimator · Parametric model