Robust heteroscedasticity consistent covariance matrix estimator based on robust mahalanobis distance and diagnostic robust generalized potential weighting methods in linear regression

ABSTRACT

The violation of the assumption of homoscedasticity and the presence of high leverage points (HLPs) are common in the use of regression models. The weighted least squares can provide the solution to heteroscedastic regression model if the heteroscedastic error structures are known. Based on Furno (1996), two robust weighting methods are proposed based on HLP detection measures (robust Mahalanobis distance based on minimum volume ellipsoid and diagnostic robust generalized potential based on index set equality (DRGP(ISE)) on robust heteroscedasticity consistent covariance matrix estimators. Results obtained from a simulation study and real data sets indicated the DRGP(ISE) method is superior.