

Robust multicollinearity diagnostic measures based on minimum covariance determinants approach

ABSTRACT

The classical multicollinearity diagnostic measures are not resistant to high leverage points since their formulation are based on eigen analysis of classical correlation matrix that is very sensitive to the presence of these leverages. The existing robust multicollinearity diagnostics also are not able to diagnose the variables which are collinear to each other. In this paper, we proposed robust multicollinearity diagnostic measures based on the Minimum Covariance Determination (MCD), which is a highly robust estimator of multivariate location and scatter. The results of numerical example and simulation study confirmed the merit of our new proposed robust multicollinearity diagnostic measures.

Keyword: Multicollinearity; Condition number; Variance Inflation Factor; Variance Decomposition Properties; High leverage points; Minimum covariance determination method