

A RIDGE TYPE PRELIMINARY TEST ESTIMATOR IN THE LINEAR REGRESSION MODEL

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The multicollinearity is defined as the existence of nearly linear dependency among column vectors of the design matrix $X = [X_1, X_2, \dots, X_p]$ in the multiple linear regression model $Y = X\beta + \varepsilon$. If multicollinearity exists, the Ordinary Least Squares method produces estimates with large variances; wide confidence intervals, unreliable tests and incorrect signs. Instead of using the Ordinary Least Square Estimator (OLSE), some biased estimators are considered in the regression analysis in the presence of multicollinearity. When different estimators are available, the preliminary test estimation procedure is adopted to select a suitable estimator. In this research two biased estimators, the Almost Unbiased Ridge Estimator (AURE) and Stochastic Restricted Almost Unbiased Ridge Estimator (SRAURE) are combined to define a new preliminary test estimator, namely Preliminary Test Stochastic Ridge Estimator (PTSRE) and the stochastic properties of PTSRE were derived. In particular, we showed that the proposed estimator is superior to the AURE and SRAURE in the mean square error matrix sense under certain conditions.

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