

THE EFFICIENCY OF MODIFIED JACKKNIFE AND RIDGE TYPE REGRESSION ESTIMATORS: A COMPARISON

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Abstract. A common problem in multiple regression models is multicollinearity, which produces undesirable effects on the least squares estimator. To circumvent this problem, two well known estimation procedures are often suggested in the literature. They are Generalized Ridge Regression (GRR) estimation suggested by Hoerl and Kennard [8] and the Jackknifed Ridge Regression (JRR) estimation suggested by Singh et al. [13]. The GRR estimation leads to a reduction in the sampling variance, whereas, JRR leads to a reduction in the bias. In this paper, we propose a new estimator namely, Modified Jackknife Ridge Regression Estimator (MJR). It is based on the criterion that combines the ideas underlying both the GRR and JRR estimators. We have investigated standard properties of this new estimator. From a simulation study, we find that the new estimator often outperforms the LASSO, and it is superior to both GRR and JRR estimators, using the mean squared error criterion. The conditions under which the MJR estimator is better than the other two competing estimators have been investigated.

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