

# Modified Ridge Type Estimator in Multiple Linear Regression Model

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Instead of using the Ordinary Least Square Estimator (OLSE), the biased estimators are considered in the multiple linear regression model in the presence of multicollinearity. Some of these are Ridge Estimator (RE), Liu Estimator (LE) and Modified Almost Unbiased Liu Estimator (MAULE). An alternative method for solving the multicollinearity problem is to incorporate the prior information which is available in the form of exact restrictions with sample information. The Restricted Least Square Estimator (RLSE) is proposed by using sample and exact prior information. In the literature, the Restricted Liu Estimator (RLE) is proposed by replacing RLSE instead of OLSE in the LE. Since the combination of two different estimators might inherit the advantages of both estimators, we propose the new estimator named as New Ridge Type Estimator by combining MAULE and RLSE. The stochastic properties of the proposed estimator are obtained. Moreover, the performance of the proposed estimator over the OLSE, RE, MAULE and RLSE in terms of the Scalar Mean Squared Error criterion is investigated by performing a Monte Carlo simulation with the different degrees of collinearity. Furthermore, numerical example is used to evaluate its performance. Based on the simulation study, it has been noticed that the proposed estimator is superior to other existing estimator for some values of shrinkage parameter and different degrees of collinearity. Similarly, it is examined that the proposed estimator is superior to OLSE. According to the numerical example, it can be concluded that the proposed estimator is superior to some other existing estimator for some values of shrinkage parameter. Finally, it can be concluded that proposed estimator is meaningful in practice for the multicollinearity data.

*Keywords:* Biased estimator, Multicollinearity, Ordinary least square estimator, Prior information, Scalar mean squared error