

# Modified Stochastic Restricted Ridge Estimator in Misspecified Linear Regression Model

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## Abstract

*Misspecification of the linear model due to omitting relevant explanatory variable from the model and multicollinearity among the explanatory variables are considered as two of the problems which are considered seriously when estimating parameters. The biased estimators based on the sample model  $y = X\beta + \varepsilon$  with stochastic restricted prior information has received much attention in the statistical literature as a solution to multicollinearity problem. In this research, the existing stochastic restricted ridge estimator (SRRE) was further studied by considering properties of the SRRE when the linear regression model is misspecified. Furthermore, the superiority condition of the SRRE under misspecification was obtained over mixed regression estimator (MRE) in mean square error matrix (MSEM) criterion. A numerical example was used to illustrate the validity of the theoretical findings.*

**Keywords:** Mean Square Error Matrix, Misspecified Regression Model, Multicollinearity, Stochastic Restricted Ridge Estimator