

Napassaporn Juntawong 2014: A Comparison of Parameter Estimators in Regression Models with Multicollinearity. Master of Science (Statistics), Major Field: Statistics, Department of Statistics. Thesis Advisor: Associate Professor Premjai Trisaranuwattana, M.Stat. 120 pages.

This research focused on estimation of multiple linear regression coefficients with multicollinearity, estimators under study were Ordinary Least Square estimator (OLSE), Ridge Regression estimator (RRE) and Liu estimator (LE). The Average of Mean Square Error (AMSE) was used as a criterion in comparisons among three estimators. The conditions under investigated were as follow; 3, 5 and 10 independent variables, sample sizes of 30, 50 and 100, errors were normally distributed with zero mean and variances of 0.01, 1 and 100. Also included in the study was degree of correlation between any two independent variables which were at 4 levels; 0.8, 0.9, 0.95 and 0.99. All data were generated by Monte Carlo techniques with repeated 1,000 times under each situations.

The results of the research were as follows; For 3, 5 and 10 independent variables in regression model LE is the optimal method for all cases. It was also found that OLSE and RRE estimators were as efficient as LE when variances of error were low as 0.01 or 1.

When considering factors affected the regression coefficient estimators, it showed that degree of correlation, amount of error variances and sample sizes were important factors. This implied that the AMSE increased as degree of correlation and variances of error increased, on the other hand the AMSE decreased as sample size increased.

---

Student's signature

---

Thesis Advisor's signature