

C223161 : MAJOR

KEY WORD: LATENT ROOT REGRESSION/MULTICOLLINEARITY/RIDGE REGRESSION

NUSARA SATHIDPOSRI : A COMPARISON ON MULTIPLE REGRESSION COEFFICIENT ESTIMATORS BY USING RIDGE REGRESSION AND LATENT ROOT REGRESSION IN CASE OF EXISTING MULTICOLLINEARITY AMONG INDEPENDENT VARIABLES.

THESIS ADVISOR : ARUNEE KUMLUNG, Ph.D., 175 PP. ISBN 974-582-315-5

The purpose on this studies is to compare the multiple regression coefficients estimated by the methods of Ordinary Least Square (OLS), Ridge Regression by Hoerl, Kannard and Baldwin method (HKB) and by Lawless and Wang (LW), and Latent Root Regression (LR). The comparison were made under the existing of multicollinearity among independent variables, the variability of sample sizes, the number of independent variables and the distributions of random error. The data for each experiment were obtained by using multinormal simulation technique.

The conclusions obtained from this studies are as follows. Under Normal distribution with mean 0 and variance 1, the average mean squares error (AMSE) of Latent Root Regression coefficient is smaller than Ordinary Least Square coefficient and Ridge Regression coefficient for the three and five independent variables. In the case of the small sample size and the high degree of multicollinearity, HKB method gives the best estimator. For the Scale contaminated distribution, the AMSE of Latent Root Regression coefficient is smaller than those of Ridge Regression coefficient and Ordinary Least Squares coefficient, but the HKB estimator has the lowest AMSE for the small and medium sample sizes and the high degree of multicollinearity. Furthermore, the AMSE of HKB estimator is the lowest value in every level of multicollinearity and in the high percent of contamination and scale factor. Under the Lognormal distribution, the LR estimator is the best estimator.

The changes of AMSE of the estimators depend on the number of independent variables, the degree of multicollinearity, the sample size and the type of distribution. The AMSES of all estimators under Normal distribution are smaller than those under the other distributions.