

A MODIFICATION RULE ON SELECTION  
OF THE RIDGE PARAMETER

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**Abstract**

Many formulae have been suggested to estimate the ridge parameters. Most of these formulae ignore the features of the model such as number of the explanatory variables, degree of illconditioning and the significance of the model. In this article two formulae are proposed for selecting the ridge parameter  $K$  ; for ridge regression . A Monte Carlo study is conducted to compare the mean square errors of ridge regression under the new formulae and some other formulae. The numerical results of the simulation indicate that the performance of the new formulas does produce the smaller mean square errors.

**Key Words** : Illconditioning; Monte Carlo; MSE; Multicollinearity  
Ridge Parameter; Ridge regression.

**1. Introduction**

The regression model is

$$\underline{Y} = \underline{X}\underline{\beta} + \underline{u} \quad \dots (1)$$

$\underline{Y}$  is an  $(n \times 1)$  vector of observation on a response variable,  $\underline{X}$  is an  $(n \times p)$  matrix of observations on  $p$  explanatory variables,  $\underline{\beta}$  is the  $(p \times 1)$  vector of regression coefficients and  $\underline{u}$  is an  $(n \times 1)$  vector of unobservable errors satisfying  $E(u) = 0$  ,  $E(uu') = \sigma^2 I$ . It is assumed that  $\underline{X}$  and  $\underline{Y}$  have been scaled so that  $(\underline{X}'\underline{X})$  is the