COMPARISONS AMONG SOME ESTIMATORS IN MISSPECIFIED LINEAR MODELS WITH MULTICOLLINEARITY

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Abstract. In this paper we deal with comparisons among several estimators available in situations of multicollinearity (e.g., the $r - k$ class estimator proposed by Baye and Parker, the ordinary ridge regression (ORR) estimator, the principal components regression (PCR) estimator and also the ordinary least squares (OLS) estimator) for a misspecified linear model where misspecification is due to omission of some relevant explanatory variables. These comparisons are made in terms of the mean square error (mse) of the estimators of regression coefficients as well as of the predictor of the conditional mean of the dependent variable. It is found that under the same conditions as in the true model, the superiority of the $r - k$ class estimator over the ORR, PCR and OLS estimators and those of the ORR and PCR estimators over the OLS estimator remain unchanged in the misspecified model. Only in the case of comparison between the ORR and PCR estimators, no definite conclusion regarding the mse dominance of one over the other in the misspecified model can be drawn.

Key words and phrases: Misspecification, multicollinearity, ordinary ridge regression estimator, principal components regression estimator, $r - k$ class estimator.