https://www.tandfonline.com/doi/abs/10.1080/03610920802503396

Combining Unbiased Ridge and Principal Component Regression Estimators

Feras Sh. M. Batah

Department of Statistics , University of Pune , Pune, India

E-mail: ferashaker2001@yahoo.com

M. Revan Özkale

Department of Statistics, Çukurova University, Adana, Turkey

S. D. Gore

Department of Statistics, University of Pune , Pune, India

Pages 2201-2209 | Received 10 Mar 2008, Accepted 24 Sep 2008, Published online: 04 Jun 2009

Abstract

In the presence of multicollinearity problem, ordinary least squares (OLS) estimation is inadequate. To circumvent this problem, two well-known estimation procedures often suggested are the unbiased ridge regression (URR) estimator given by Crouse et al. (1995) and the (r, k) class estimator given by Baye and Parker (1984). In this article, we proposed a new class of estimators, namely modified (r, k) class ridge regression (MCRR) which includes the OLS, the URR, the (r, k) class, and the principal components regression (PCR) estimators. It is based on a criterion that combines the ideas underlying the URR and the PCR estimators. The standard properties of this new class estimator have been investigated and a numerical illustration is done. The conditions under which the MCRR estimator is better than the other two estimators have been investigated.

Keywords: **(r, k) class estimator, Multicollinearity, Ordinary least squares estimator, Ordinary ridge regression estimator, Principal components regression estimator, Unbiased ridge regression estimator.**