On decomposing the Watson efficiency of ordinary least squares in a partitioned weakly singular linear model

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Abstract

We consider the estimation of regression coefficients in a partitioned weakly singular linear model and focus on questions concerning the Watson efficiency of the ordinary least squares estimator of a subset of the parameters with respect to the best linear unbiased estimator. Certain submodels are also considered. The conditions under which the Watson efficiency in the full model splits into a function of some other Watson efficiencies is given special attention.

Keywords

BLUE, efficiency multiplier, Frisch–Waugh–Lovell theorem, linear sufficiency, OLSE, reduced linear model, splitting the efficiency.

References:

Bloomfield, P. and G.S. Watson (1975). The inefficiency of least squares. *Biometrika 62*, 121–128.

Drury, S.W., S. Liu, C.-Y. Lu, S. Puntanen and G.P.H. Styan (2002). Some comments on several matrix inequalities with applications to canonical correlations: historical background and recent developments. *Sankhyā, Ser. A 62*, 453–507.

Drygas, H. (1983). Sufficiency and completeness in the general Gauss–Markov model. *Sankhyā, Series A*, *45*, 88–98.

Groß, J. and S. Puntanen (2000). Estimation under a general partitioned linear model. *Linear Algebra Appl. 321*, 131–144.

Watson, G.S. (1955). Serial correlation in regression analysis, I. *Biometrika 42*, 327–341.

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