

Inversion of 3×3 Partitioned Matrices in Investigation of the Twoepoch Linear Model with the Nuisance Parameters

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Abstract

The estimation procedures in the multiePOCH (and specially twoepoch) linear regression models with the nuisance parameters that were described in [2], Chapter 9, frequently need finding the inverse of a 3×3 partitioned matrix. We use different kinds of such inversion in dependence on simplicity of the result, similarly as in well known Rohde formula for 2×2 partitioned matrix. We will show some of these formulas, also methods how to get the other formulas, and then we apply the formulas in estimation of the mean value parameters in the twoepoch linear regression model with the nuisance parameters.

Key words: Inversion of partitioned matrices; Rohde formula; twoepoch regression model; useful and nuisance parameters; best linear estimators of the mean value parameter.

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1 Notations

The following notation will be used throughout the paper:

\mathbb{R}^n	the space of all n -dimensional real vectors;
\mathbf{u}, \mathbf{A}	the real column vector, the real matrix;
$\mathbf{A}', r(\mathbf{A})$	the transpose, the rank of the matrix \mathbf{A} ;