

# Some comments on estimations under a restricted linear model and its implicitly restricted linear model

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## Abstract

In the investigation of the restricted linear model  $\{\mathbf{y}, \mathbf{X}\beta \mid \mathbf{A}\beta = \mathbf{b}, \sigma^2\mathbf{\Sigma}\}$ , the parameter constraints  $\mathbf{A}\beta = \mathbf{b}$  are often handled by transforming into an implicitly restricted linear model. The two models are not necessarily equivalent when estimating the unknown parameters under different optimal criteria. In this talk, I present necessary and sufficient conditions for the ordinary least-squares estimations under the two models to be equal. In addition, we consider relations between the best linear unbiased estimations under the two models.

## Keywords

Restricted linear model, Implicitly restricted model, OLSE, BLUE, Equality of estimators, Moore-Penrose inverse of matrix, Matrix rank method.