BLUEs remain BLUEs in misspecified models: what happens to the BLUEs' covariance matrices?

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Abstract

We consider the "original" linear model, say $\mathscr{A}$, and the misspecified model $\mathscr{B}$, which differ only in their error covariance matrices. The conditions under which every representation of the BLUE of estimable parametric vector under $\mathscr{A}$ remains BLUE under the misspecified model $\mathscr{B}$ are well known since C.R. Rao's paper in early 1970s. In this article we give necessary and sufficient conditions under which also the covariance matrices of the BLUEs remain the same. Moreover, we consider the conditions under which the weighted sums of squares of errors remain the same.

This talk is based on joint work with Stephen J. Haslett, Jarkko Isotalo and Augustyn Markiewicz.

Keywords

Best linear unbiased estimator, BLUE, covariance matrix, equality of the BLUEs, misspecified model, sum of squares of errors.