

Estimators of serial covariance parameters in multivariate linear models

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Abstract

The basic model we consider is the multivariate linear model with serial correlation structure:

$$Y = XB + \mathbf{e}, \quad \text{vec}(\mathbf{e}) \sim N(0, \Sigma \otimes I_n), \quad \Sigma = \sigma^2 \rho^{|i-j|}.$$

Here $Y_{n \times p}$ is a matrix of independent p -variate observations, $X_{n \times m}$ is a design matrix and $\mathbf{e}_{n \times p}$ is a matrix of random errors. As for the unknown parameters, $B_{m \times r}$ is a location parameters matrix, and σ^2, ρ are (scalar) covariance parameters.

Our aim is to estimate the unknown parameters of matrix Σ . We propose a method for obtaining explicit estimators of both σ^2 and ρ and we discuss some properties of the derived estimators.

Keywords

Multivariate linear model, Serial structure, Explicit estimators.

References

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