An explicit expression for the Fisher information matrix of a multiple time series process

André Klein

University of Amsterdam, The Netherlands

Abstract

The principal result in this paper is concerned with the derivative of a vector with respect to a block vector or matrix. This is applied to the asymptotic Fisher information matrix (FIM) of a stationary vector autoregressive and moving average time series process (VARMA). Representations which can be used for computing the components of the FIM are then obtained. In a related paper of Klein (2000), the derivative is taken with respect to a vector. This is obtained by vectorizing the appropriate matrix products whereas in this paper the corresponding matrix products are left unchanged.

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Keywords

Matrix differential rules, matrix polynomial, Fisher information matrix, VARMA process.

References:

Klein, A. (2000): A generalization of Whittle's formula for the information matrix of vector mixed time series. *Linear Algebra Appl. 321*, 197–208.