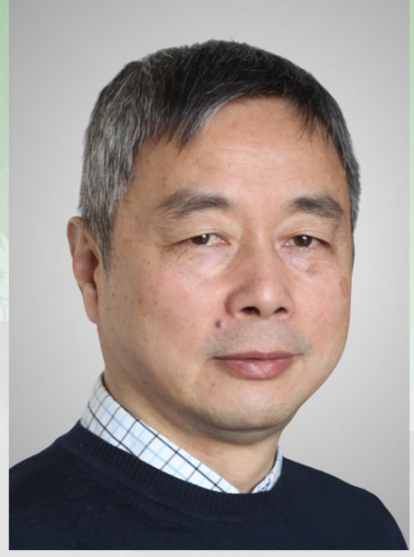
香港中文大學統計學系
Department of Statistics
THE CHINESE UNIVERSITY OF HONG KONG

DISTINGUISHED LECTURE

Identification and Estimation for Matrix Time Series CP-factor Models



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2024 Distinguished Achievement Award, ICSA
Saw Swee Hock Professor of Statistics (2020 & 2024), NUS
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Date: 30 December 2024 (Monday)
Time: 2:30 pm — 3:30 pm
Venue: LT2, Lady Shaw Building,
The Chinese University of Hong Kong

Abstract

We investigate the identification and the estimation for matrix time series CP-factor models. Unlike the generalized eigenanalysis-based method of Chang et al. (2023) which requires the two factor loading matrices to be full-ranked, the newly proposed estimation can handle rank-deficient factor loading matrices. The estimation procedure consists of the spectral decomposition of several matrices and a matrix joint diagonalization algorithm, resulting in low computational cost. The theoretical guarantee shows that the proposed estimation exhibits a faster convergence rate than that of Chang et al. (2023). In fact the new estimator is free from the adverse impact of any eigen-gaps, unlike most eigenanalysis-based methods. Furthermore, in terms of the error rates of the estimation, the proposed procedure is equivalent to handling a vector time series of dimension max(p, q), instead of p x q, where (p, q) are the dimensions of the matrix time series concerned. We have achieved this without assuming the "near orthogonality" of the loadings under various incoherence conditions often imposed in the CP-decomposition literature. Illustration with both simulated and real matrix time series data shows the usefulness of the proposed approach.

(Joint work with Jinyuan Chang, Yue Du, and Guanglin Huang)

☆☆☆☆☆ All are welcome ☆☆☆☆☆

For enquiries please contact Miss Esther TAM (Tel: 3943 7931)
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