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Generalized Yule-Walker Estimation for Spatio-Temporal Models with Unknown Diagonal Coefficients

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Abstract

We consider a class of spatio-temporal models which extend popular econometric spatial autoregressive panel data models by allowing the scalar coefficients for each location (or panel) different from each other. To overcome the innate endogeneity, we propose a generalized Yule-Walker estimation method which applies the least squares estimation to a Yule-Walker equation. The asymptotic theory is developed under the setting that both the sample size and the number of locations (or panels) tend to infinity under a general setting for stationary and α-mixing processes, which includes spatial autoregressive panel data models driven by *i.i.d.* innovations as special cases. The proposed methods are illustrated using both simulated and real data.

JEL classification: C13, C23, C32.

Keywords: α-mixing, Dynamic panels, High dimensionality, Least squares estimation, Spatial autoregression, Stationarity.

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