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Functional-coefficient spatial autoregressive models with nonparametric spatial weights

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We apply local linear regression and sieve estimation technique to estimate functional coefficients and an unknown spatial weighting function, respectively, via a nonparametric GMM estimation method, where we allow both exogenous and endogenous spatial covariates. A consistency result is derived to support the method. Moreover, a two-step estimator is constructed for the functional coefficients, and under certain conditions, we show that this estimator can be oracle efficient in the sense that its limiting distribution is the same regardless of whether or not the spatial weights are known. Both simulated and real data examples are used to illustrate our theory.

Keywords: Conditional Solow economic growth convergence equation; Endogenous spatial covariates; Functional coefficients; Local linear regression; Nonparametric GMM estimator; Sieve estimator; Spatial autoregressive models.

JEL classification codes: C14; C21; O47

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