

GMM Estimation of Spatial Autoregressive Probit Models: An Analysis on the Implementation of the *District Planning System* in Japan

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Abstract

The objective of this paper is two-fold. First, on a theoretical level, we propose a feasible generalized method of moments (GMM) estimator for spatial binary probit models containing both a spatial lag latent dependent variable and spatial autoregressive disturbances. Under empirically reasonable conditions, the estimator is consistent and asymptotically normal. By using Monte Carlo experiments, the properties of our estimator are numerically assessed. On an empirical level, the second objective is to examine the presence of spatial dependence in the implementation of the District Planning System in Yokohama city, Japan, by applying our proposed GMM estimator. The District Planning System is a detailed land use management system introduced in small areas based on the local inhabitants' demands. The estimation results indicate the existence of significant spatial effects in the utilization of the system, which implies that the inhabitants' preferences for local environment are spatially autocorrelated.

Keywords:

Generalized method of moments; Spatial autocorrelation; Probit models; District Planning System

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