

Spatial sampling and spatial autocorrelation in econometric studies of forestation in China

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Econometric modelling of land cover and land use change is often hampered by spatial autocorrelation. The observations in such studies are often pixels (picture units) from remote sensed satellite data and neighbouring observations are highly correlated. In this paper we analyse such data from Jiangxi province in China, where there are 166,000 observations based on 1km x 1km pixels. To analyse such data with a spatial error model would require forming a weighting matrix of 166,000×166,000 which is computationally infeasible. Instead we do spatial sampling, choosing every 5th, 10th, pixel etc, which gets rid of most of the spatial autocorrelation, gives the same coefficients and is generally more manageable for when we run our econometric models. Based on the results we offer some suggestions of the optimal spatial sampling strategy in such cases.