Reflections on Development Economics

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Testing for Spatial Dependence in a Spatial Autoregressive (SAR) Model in the Presence of Endogenous Regressors

Malabika Koley
Department of Economics
University of Illinois at Urbana-Champaign

Abstract of the talk

Spatial modelling is one of the growing areas of research in economics in recent years. However, these models are not tested enough. Even if tests are performed, they are done in a piece-wise fashion. Another age-long problem in economic modelling is endogeneity of one or more variables. Endogeneity is caused due to a number of reasons one of which is simultaneous modelling of economic variables. This paper considers specification testing in the context of a spatial autoregressive (SAR) model with an endogenous regressor. First, we construct standard Rao's score (RS) tests for null hypothesis of the absence of spatial autocorrelation and endogeneity. These standard RS tests are invalid in the presence of local misspecification of the models under the alternative hypotheses. Therefore, in our next step, we develop adjusted tests using the technique of \cite{bera1993specification}, that are robust to local misspecification. These adjusted (or robustified) tests are simple to calculate and easy to implement. With a Monte Carlo study we investigate the finite sample performance of all the proposed tests, and the results confirm that the robust tests perform better compared to their non-robust counterparts both in terms of size and power. Finally, we illustrate the usefulness of our proposed tests with the help of an urban crime example."