**Indirect Inference Estimation of Spatial Autoregressions**

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**Abstract**

The ordinary least squares (OLS) estimator for spatial autoregressions may be consistent as pointed out by Lee (2002), provided that each spatial unit is influenced aggregately by a significant portion of the total units. This paper presents a unified asymptotic distribution result of the properly recentered OLS estimator and proposes a new estimator that is based on the indirect inference (II) procedure. The resulting estimator can always be used regardless of the degree of aggregate influence on each spatial unit from other units and is consistent and asymptotically normal. The new estimator is straightforward to implement, does not rely on distributional assumptions, and is robust to unknown heteroscedasticity. In comparison with the competing generalized method of moments (GMM) estimator proposed by Lin and Lee (2010), the II estimator is found in simulations to have better finite-sample performance and be much less demanding in computational time. The II procedure is applied to an empirical study of teenage pregnancy rates in 10 states in the U.S. and it corroborates Lin and Lee's (2010) finding that gives strong evidence of spatial correlation among teenage pregnancy rates.