Computerlab Spatial Modeling

Go to the website https://www.rug.nl/staff/j.p.elhorst/teaching and open https://www.rug.nl/staff/j.p.elhorst/files_matlab_spatial_modeling.zip. Open Matlab and store all files in the working directory. Then run the file "Course2016cigarette". You will see that it generates the estimation results of different spatial econometric models for three spatial weight matrices: binary contiguity matrix, inverse distance matrix, and a parameterized inverse distance matrix (parameterized with factor 3). Finally, it carries out a Bayesian comparison approach.

Questions

1. Consider the results of eight models generated for the binary contiguity matrix. Identify which type of spatial econometric model (eight models in total) has been estimated.
2. An important issue in spatial econometric models is the ratio between the spatial spillover effects and the direct effects. Calculate this ratio for the price variable in the SEM, SDEM and GNS models. Which patterns do you observe? What is your conclusion about these patterns from an empirical point of view?
3. Carry out manually Likelihood Ratio tests to see whether the results of the GNS model are significantly better than those of SDM and of SDEM.
4. Write down the spatial interaction effects of the WY variable and of W*disturbance term of the GNS model. Do these values make sense?
5. Which model according to the Bayesian comparison approach based on the binary contiguity matrix turns out to be most likely. Does this combination of model and W makes sense?
6. Which model and which W according to the Bayesian comparison approach turns out to be most likely. Does this combination of model and W makes sense?

Go to the website https://www.rug.nl/staff/j.p.elhorst/teaching and open https://www.rug.nl/staff/j.p.elhorst/statacomputerlab.zip. Open Stata, store all files in your working directory, and run the file Cigarette_2017.do. This only works if xsmle and spmat have been stalled on your computer first. The spatial weight matrix is specified as a binary contiguity matrix.

Questions

1. How many static spatial econometric models (including OLS) are there according to Elhorst's Figure 1 and how many are there estimated in Stata. Identify in the output file which type of spatial econometric model has been estimated.
2. Some models do not report direct and indirect effects. Identify which ones and explain why they do not report those.
3. An important issue in spatial econometric models is the ratio between the spatial spillover effects and the direct effects. Calculate this ratio for the price variable in the SEM, SDEM and GNS models. Which patterns do you observe? What is your conclusion about these patterns from an empirical point of view?
4. Carry out manually Likelihood Ratio tests to see whether the results of the GNS model are significantly better than those of SDM and of SDEM.
5. Write down the parameter estimates of the WY variable and of W*disturbance term in the GNS model. What is striking about the outcomes and argue whether or not this makes sense.

The last command estimates the dynamic spatial panel data model.

6. Type "help xsmle" and look up where dlag is standing for.
7. What's the coefficient estimate of the contemporaneous spatial lag and the spatio-temporal spatial lag.
8. What's the difference between SR and LR effects.
9. Explain why SR_indirect effects are significant, while LR_indirect effects are not.