

Computerlab Spatial Econometric Modeling Stata

Open Stata and run the file Cigarette_Rome_2021.do. First store all files in your working directory. Running the do-file only works if xsmle and spmat have been installed on your computer. If for one reason or another installing these files is not possible, I have made the output results available in a notepad file. The spatial weight matrix is specified as a binary contiguity matrix.

Questions

1. First, the static SDM and SDEM are estimated. Compare the log-likelihood function values and the price and income spillover effects of these models with each other. What is the basic difference between spillovers determined by SDM and SDEM?
2. Next, the dynamic spatial Durbin model is estimated with spatial and time-period fixed effects. Check whether the coefficients of $Y(t-1)$, $WY(t)$ and $WY(t-1)$ sum to a value smaller than 1 (stationarity).
3. What are the short-term and long-term price spillover effects in this model?
4. How many cross-sectional average terms are added to the dynamic spatial Durbin + common factors in the last specification and to which dependent and/or independent variables are these cross-sectional averages (common factors) related.

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Answers:

1. SDM: $\text{LogL}=1691.2918$, price spillover= -0.206536 (t-value -2.44), income spillover= -0.1905271 (t-value -2.25).

SDEM: $\text{LogL}=1691.1181$, price spillover= -0.1769101 (t-value -2.28), income spillover= -0.168392 (t-value -2.15).

Spillovers in SDM are global and in SDEM are local.

2. Sum of coefficients of $Y(t-1)$, $WY(t)$ and $WY(t-1)$ is:
 $0.8659549+0.0327756+0.027315<1$.

3. Short-term price spillover: 0.1545939 (t-value 3.66), long-term price spillover= -0.3482678 (t-value -0.03).

4. 46 cross-sectional averages are added for $Y(t)$, and 46 cross-sectional averages for $Y(t-1)$.