



WORKSHOP

## INTRODUCTION TO SPATIAL ANALYSIS FOR LONGITUDINAL DATA

Frankfurt am Main, 23-25 May 2018

Many phenomena in the economics, medical and social fields, such as unemployment, crime rates or infectious diseases, tend to be spatially correlated. Spatial Econometrics, in contrast to standard econometric modelling, exploits cross-sectional and panel data collected with reference to location measured as points in space for dealing with spatial dependence and spatial heterogeneity. Our “Introduction to Spatial Analysis for Longitudinal Data” workshop offers researchers a unique opportunity to acquire the necessary theoretical and empirical toolset for the analysis of spatial longitudinal data, using the more recently developed spatial econometrics methodologies. The workshop begins by providing an overview of the more standard concepts in spatial econometrics and illustrating how one should prepare the data set for spatial analysis, before moving on to review the latest methodologies and commands (both official and user written commands) available in Stata. The workshop concludes by focusing on a number of more recent developments in spatial econometrics allowing simultaneously for serial dynamics, spatial spillovers and common factors. During the course of the workshop attention will also be given to the interpretation and presentation of results obtained.

In common with TStat’s course philosophy, each individual session is composed of both a theoretical component (in which the techniques and underlying principles behind them are explained), and an applied segment, during which participants have the opportunity to implement the techniques using real data under the watchful eye of the course tutor. Throughout the course, theoretical sessions are reinforced by case study examples, in which the course tutor discusses and highlights potential pitfalls and the advantages of individual techniques. At the end of the workshop, it is expected that participants are able identifying and evaluate which specific econometric method is more appropriate for the analysis in hand.

### TARGET AUDIENCE

Ph.D. Students, researchers and professionals working in public and private institutions interesting in acquire the latest empirical techniques to be able to independently implement spatial data analysis.

### COURSE REQUISITES

Knowledge of the arguments covered in our Introduction to Panel Data Analysis workshop, along with experience of Stata’s basic commands is required.

### WORKSHOP CODE

D-EF34

### DATE AND LOCATION

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## PROGRAM

- SESSION I:**
1. A taxonomy of spatial econometric models
  2. Overview of the new Stata 15 sp suite of commands
  3. Preparing data for the spatial longitudinal analysis:
    - Data with *shapefiles*: Creating and merging a Stata-format *shapefiles* (**spshape2dta**)
    - Spatial data declaration: **spset**
    - Data with coordinates of the geographical units **spset, coord()**
    - Balanced and unbalanced panels: **spbalance**
    - The *W*(eighting) matrix: creation, standardization and description using **spmatrix**
    - Quick spatial data visualization **grmap**
- SESSION II:**
1. A taxonomy of spatial autoregressive models for panel data
  2. Partial effects: direct, indirect and total effects
  3. Estimation and interpretation of partial effects in static spatial autoregressive models for panel data using Quasi-ML (**spxtregress**):
    - Spatial Autoregressive model
    - Spatial Durbin model
    - Spatial error model
    - Spatial Autoregressive model with autoregressive error
  4. Hypothesis testing and model selection
  5. Estimation of static generalized spatial error models using Quasi-ML (**xsmle**)
  6. Estimation of spatial autoregressive models for unbalanced panel data using Quasi-ML (mi estimate: **xsmle**)
- SESSION III:**
1. Estimation of spatial autoregressive models for panel data using GMM (**spxtivregress**)
  2. Estimation of dynamic spatial autoregressive models for panel data using Quasi-ML (**xsmle**):
    - Spatial autoregressive and Durbin models with time-lagged dependent variable
    - Spatial autoregressive and Durbin models with space-time lagged dependent variable
    - Spatial autoregressive and Durbin models with both time-lagged and space-time lagged dependent variable
    - Model selection and partial effects (long and short-run direct, indirect and total effects).
  3. Recent developments in spatial panel data modeling:
    - Spatial spillovers and common factors: i) tests for strong cross-sectional dependence, ii) one and two-stage approaches to spatial dynamic models with common factors (**xsmle**)
    - Spatial dynamic panel data models with interactive xed effects (**xsmle**).



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## REGISTRATION FEES

Students\*: € 735.00

Academic: € 1225.00

Non-Profit/Public Research Centres: € 1513.00

Commercial: € 1800.00

\*To be eligible for student prices, participants must provide proof of their full-time student status for the current academic year.

Fees are subject to VAT (applied at the current Italian rate of 22%). Under current EU fiscal regulations, VAT will not however applied to companies, Institutions or Universities providing a valid tax registration number.

Please note that a *non-refundable deposit* of €100.00 for students and €200.00 for Academic, Non-Profit/Public Research Centres and Commercial participants, is required to secure a place and is payable upon registration. The number of participants is limited to 15. Places will be allocated on a first come, first serve basis.

Course fees cover: teaching materials (handouts, Stata *do files* and datasets to used during the course), a temporary licence of Stata valid for 30 days from the beginning of the workshop, light lunch and coffee breaks.

To maximize the usefulness of this workshop, we strongly recommend that participants bring their own laptops with them, to enable them to actively participate in the empirical sessions.

## REGISTRATION DEADLINE

Individuals interested in attending this workshop must return their completed registration forms either by email ([training@tstat.eu](mailto:training@tstat.eu)) or by fax (+39 0864 206014) to TStat by the 3rd of May 2018.

## CONTACTS

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[www.tstat.eu](http://www.tstat.eu)

Further details regarding our registration procedures, including our commercial terms and conditions, can be found at <https://www.tstattraining.eu/training/spatial-analysis-longitudinal-data/>

