Scope:

Panel data modelling provides a means to estimate and test relations when there are samples containing a time series of observations for a cross section of individuals, firms, markets, countries, country-pairs etc. Panel data analysis has two major advantages over cross-sectional or time-series analysis. First, it utilises more information (i.e. more degrees of freedom) and introduces more variability in the data. As a consequence, inference of model parameters can be more accurate. Second, it allows controlling for omitted / missing / unobserved factors.

The workshop aims to provide participants with a basic background on panel data econometrics. It is intended as an introduction to the issues and opportunities arising when a panel data structure is available. In particular, the workshop covers the different structures of data and the advantages and limitations of panel data. Both static and dynamic models for panel data analysis are presented. The workshop focuses on the decisions that the researcher should make instead of the algebraic derivation of the models. The efficient research process using panel data and Stata is shown by analysing the case of bilateral trade.

Prerequisites:

Good understanding of statistics and regression analysis and preferably work experience with econometrics. Familiarity with Stata® fundamentals is highly advantageous.

Workshop content:

Lesson 1. Introduction to Data Management with Stata®

1.1. Basic Concepts
1.2. Data Management
1.3. Variables Management
1.4. How to Work Doing Research

Lesson 2. Model Estimation with Stata® I

2.1. Introduction to Model Estimation with Stata
2.2. Estimation of Linear Static Models
2.3 Main Post-Estimation Features

Lesson 3. Introduction to Panel Data Models

3.1. Data Structures
3.2. Characterizing Panel Data Methods
3.3. Advantages and Limitations of Panel Data
3.4. Why is the panel data methodology needed?
Lesson 4. Linear Static Models for Panel Data

4.1. Introduction to Linear Static Models
4.2. Fixed Effects Models
4.3. Random Effects Models
4.4. Fixed Effects Models versus Random Effects Models
4.5. Limitations of Linear Static Panel Data

Lesson 5. The Gravity Model of International Trade

Lesson 6. Model Estimation with Stata® II

6.1. Estimation of Linear Static Models for International Trade Panel Data
6.2. Main Post-Estimation Features

Lesson 7. Linear Dynamic Models for Panel Data

7.1. Autoregressive Models
7.2. Models with Predetermined Variables
7.3. Models with Strictly Exogenous Variables
7.4. System GMM
   7.4.1 System GMM for Autoregressive Models
   7.4.2 System GMM for Models with Predetermined Variables
7.5. Specification Tests
   7.5.1 Testing for Residual Serial Correlation
   7.5.2. Testing for Overidentifying Restrictions
   7.5.3. Incremental Sargan Tests

Lesson 8. Model Estimation with Stata® III

8.1. Estimation of Linear Dynamic Models for International Trade Panel Data
   8.1.1. The Difference GMM Estimator
   8.1.2. The System GMM Estimator
8.2. Main Post-Estimation Features

Timetable:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday 15-08-2011</td>
<td>Morning</td>
<td>Lessons 1+2</td>
</tr>
<tr>
<td>Monday 15-08-2011</td>
<td>Afternoon</td>
<td>Hands-on Computer</td>
</tr>
<tr>
<td>Tuesday 16-08-2011</td>
<td>Morning</td>
<td>Lesson 3</td>
</tr>
<tr>
<td>Tuesday 16-08-2011</td>
<td>Afternoon</td>
<td>Hands-on Computer</td>
</tr>
<tr>
<td>Wednesday 17-08-2011</td>
<td>Morning</td>
<td>Lessons 4+5</td>
</tr>
<tr>
<td>Wednesday 17-08-2011</td>
<td>Afternoon</td>
<td>Hands-on Computer</td>
</tr>
<tr>
<td>Thursday 18-08-2011</td>
<td>Morning</td>
<td>Lesson 6</td>
</tr>
<tr>
<td>Thursday 18-08-2011</td>
<td>Afternoon</td>
<td>Hands-on Computer</td>
</tr>
<tr>
<td>Friday 19-08-2011</td>
<td>Morning</td>
<td>Lessons 7+8</td>
</tr>
<tr>
<td>Friday 19-08-2011</td>
<td>Afternoon</td>
<td>Hands-on Computer</td>
</tr>
</tbody>
</table>
Basic references:


Gravity:


Additional references panel data analysis: