Intermediate Econometrics

Lectures: Tuesday, 08:30–10:00, HS 3042
       Wednesday, 08:30–10:00, HS 1098

Exercise Sessions: Friday, 08:30–10:00, HS 1016
                    Friday, 10:15–11:45, Alte Uni, HS 1
                    Friday, 12:15-13:45, HS 1016
                    (Students have to take part in only one exercise session.)

PC Sessions: 5 PC sessions are offered on Friday from 08:30 to 17:45 in Room - 1001 b (KG II) in exchange with the regular exercise session. Please consult our homepage for further information:
             http://www.empfwifo.uni-freiburg.de/lehre-teaching-1.

Additional Tutorials: Tuesday, 18:00–19:30, Alte Uni, HS 1 (General)
                       Wednesday, 12:00–13:30, Alte Uni, HS 1 (NBS)
                       (Students may take part in an additional tutorial.)

Exam: TBA

Credits: 10 ECTS

Grade: 100% Final Exam

Prerequisites
Knowledge of calculus, linear algebra, statistics and probability theory as taught in the first three semesters of the bachelor program in economics.

Qualification Target
The course enables students to develop a deep understanding of linear regression methods and involves an intuitive and applied presentation of applied econometrics with reference to examples used in the Economics literature. Additionally, analysis of cross-sectional data and time series data at the graduate level will be presented.

Course Description
The course provides an up-to-date introduction into econometrics at the level of Wooldridge's textbook on "Introductory Econometrics – A Modern Approach". The course will review basic
concepts from calculus, statistics and probability theory, and matrix algebra. Then, the course will give an introduction into regression analysis based on cross sectional data, time series data, and panel data. The course will also cover selected topics in time series analysis and microeconometrics.

In the accompanying exercise sessions, the participants will learn to implement the estimation methods using the econometric package TSP for some real world economic problems. Some applications will be using the econometric package STATA.

**Homeworks:** There will be two homeworks related to the topics covered in the course. The submission of the homeworks is not part of the final grade. It is voluntary, but highly recommended! The homeworks might be submitted as a team work of four students at most. Please submit “handwritten” solutions (except for the TSP/Stata output). In particular, do not submit copies!

**Outline**

1. **Basics**
   1.1 Sums and Products
   1.2 Statistics and Probability Theory (WO App. B–C)
   1.3 Matrix Algebra (WO App. D)
2. **Introduction into Econometrics (WO Chapter 1)**
3. **Regression Analysis with Cross-Sectional Data (WO Chapters 2–9)**
   3.1 The Simple Regression Model
   3.2 Multiple Regression Analysis: Estimation
   3.3 Multiple Regression Analysis: Inference
   3.4 Multiple Regression Analysis: OLS Asymptotics
   3.5 Multiple Regression Analysis: Further Issues
   3.6 Multiple Regression Analysis with Qualitative Information: Binary (or Dummy) Variables
   3.7 Heteroskedasticity
   3.8 More on Specification and Data Issues
4. **Regression Analysis with Time Series Data (WO Chapters 10–12, 18)**
   4.1 Basis Regression Analysis with Time Series Data
   4.2 Further Issues in Using OLS with Time Series Data
   4.3 Serial Correlation and Heteroskedasticity in Time Series Regressions
   4.4 Advanced Time Series Topics
5. **Microeconometrics (WO Chapters 13, 15, 17)**
   5.1 Pooling Cross Sections across Time: Simple Panel Data Methods
   5.2 Instrumental Variables Estimation and Two Stage Least Squares
   5.3 Limited Dependent Variable Models and Sample Selection

**Main References**


**Further Information**

The basic estimation techniques will be implemented in the PC-Pool using the econometric package TSP. We have a site license for TSP (both for Windows and MAC PCs) which can be used by students. TSP International (see www.tspintl.com) provides numerous examples for using the program for advanced estimation problems. The user’s guide and the reference manual for TSP are available under http://www.tspintl.com/products/index.htm.