
MPP-C5adv: Intermediate Statistics: Time Series, Panel Data and Limited Dependent Variables

Mark Kayser

1. General Information

Class hours	Tuesdays, 14-17h
Class room	r 1.61 (computer lab)
Instructor	Prof. Mark Kayser, PhD
Office (room #)	r 2.54
Telephone	-326
E-Mail	kayser@hertie-school.org
Office Hours	After class and by appointment (email: Dayna Sadow at sadow@hertie-school.org)

2. Course Contents and Learning Objectives

This course introduces students to an array of commonly used statistical techniques with a strong emphasis on actual application. All classes take place in the computer lab and divide time between theory and application. Students are assigned a problem set at the end of each class covering that day's materials and the beginning of the following class is used to review the answers. As this is an applied class, most of these assignments involve the proper analysis of practice datasets using Stata. This class design is intended to provide students with both a theoretical and concrete understanding of statistical techniques. The course begins with a review of OLS regression and covers elementary time-series and panel data, before introducing students to maximum likelihood estimation and some categorical data designs. Additional useful material on factor analysis and instrumental variables will be covered as time permits.

3. Course Requirements and Grading

Evaluation is conducted via a combination of one data analytic project (45%), one in-class final exam (45%) and a series of weekly assignments that are graded for effort (10%). You may collect your own data for your project. This is an opportunity to get early data work done for your thesis while meeting a class requirement. The data analysis report itself is brief (maximum 7 pages) but bear in mind that data collection takes considerable time.

None of the assignments in this class are collaborative. I encourage you to study together and learn to use the software together. Assignments, however, are expected to represent your individual effort. Copied or plagiarized work will incur penalties consistent with the Hertie School's policy on academic honesty.

This syllabus may be altered during the semester to accommodate the learning pace and interests of the class. It is the students' responsibility to keep abreast of assignments and due dates by attending class.

Attendance: Students are expected to be present and prepared for every class session. Active participation during lectures and seminar discussions is essential. If unavoidable circumstances arise which prevent attendance or preparation, the instructor should be advised by email with as much advance notice as possible. Please note that students cannot miss more than two sessions. For further information please consult the examination rules §5.

4. Readings

Readings come primarily from the Woodridge book below. Readings for a number of topics not covered in Woodridge will be uploaded in Moodle. The library has five copies of the Woodridge book and one reserve copy of Long.

Book (Required):

Jeffrey M. Woodridge. (JMW) Introductory Econometrics: A Modern Approach. 4th ed.

Optional Reference:

- Scott J. Long. Regression Models for Categorical and Limited Dependent Variables
- Peter Kennedy. A Guide to Econometrics. (This is an excellent, non-technical companion that covers much of what we do.)
- Joop Hox. Multilevel Analysis: Techniques and Applications.
- Andrew Gelman & Jennifer Hill. Data Analysis Using Regression and Multilevel/Hierarchical Models.
- UCLA has an excellent statistics resource website --- simply the best that I've seen --- with many tutorials, problem sets, and explanations. They offer an introduction to Stata and concrete examples of many techniques. (<http://www.ats.ucla.edu/stat/stata/>)

Articles:

The required and optional journal articles listed on the syllabus are available on the course's Moodle website.

5. Sessions

Session 1: September 10, 2013

Linear Regression Review

Read: JMW Ch. 3, skim Ch. 4

Session 2: September 17, 2013

Model Building and Practical Problems

Read: JMW Ch. 6.3 & 9; Schrodtt (2013)

Session 3: September 24, 2013

Interactions, Interactions, Interactions (and more interactions)

Read: JMW Ch. 6.2 & 7.4; Braumoeller. (2004) IO; Brambor, Clarke and Golder (2006), PA; Friedrich (1982) AJPS

Session 4: October 1, 2013

Time Series: Static and Finite Distributed Lag Models

Read: JMW Ch. 10

Session 5: October 8, 2013

Time Series: Stationarity and Weak Dependence

Read: JMW Ch. 11 & 12

Session 6: October 15, 2013

Panel Data: Pooled Cross-sections, Difference-in-Differences, First Differences

Read: JMW Ch. 13

October 22: @@@ No Class –Reading Week @@@

Session 7: October 29, 2013

Panel Data: Fixed Effects and Random Effects

Read: JMW Ch. 14; Arellano and Bond; Beck and Katz (1995) APSR; Pluemper Troeger (2007)

Session 8: November 5, 2013

Maximum likelihood with a Linear Probability Model

Read: Long 2.6

Session 9: November 12, 2013

Logit, Probit and Multinomial Logit

Read: JMW Ch. 17; Long Ch. 3; Ai & Norton (2003) Economic Letters

Session 10: November 19, 2013

Multi-Level Models

Read: Hox Ch. 1 & 2; Gelman & Hill Ch. 11-13.

Session 11: November 26, 2013

Factor Analysis/Principal Components

Read: Agresti and Finlay, Ch. 16.3, <http://tinyurl.com/2fvhhgo>

Session 12: December 3, 2013

In-class exam

Exam Week: December 9-13, 2013

Complete your Data Analysis Project and upload it as a pdf file to Moodle dropbox by **5pm, Monday, 16 December, 2013**