Introduction to Econometrics (Econometrics I)  
CEU Department of Economics  
Fall 2016

Instructor:  
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Office hours: Regular office hours TBA or by appointment
Course level: First year MA
Credits: 3 CEU credits (6 ECTS credits)
Pre-requisites: Mathematical Statistics
Teaching Assistant: Révész Gábor

Course Description:  
The course is a largely intuitive introduction to linear regression models---still the workhorse in applied work in economics. The focus is on the ordinary least squares estimator, its interpretation, and the assumptions underlying its statistical properties.

Learning outcomes:  
After completing the course students should be able to (1) interpret regression results; (2) understand the assumptions underlying regression analysis and judge in an educated manner whether they hold in a given problem; (3) conduct empirical research using economic data and run meaningful regressions on the computer.

Textbook:  
Introductory Econometrics: A Modern Approach, 4th edition, by Jeffrey Wooldridge (Southwest-Cengage Publishers). It is essential that in addition to the lectures you keep up with the corresponding book chapters. Most of the data sets and homework problems will also be taken from the textbook.

Software:  
Real world examples and actual data analysis are an essential part of the course. The software package we will use is Stata. You will learn how to access and use Stata in the seminars. It’s pretty intuitive and easy.

Assessment:  
Weekly problem sets---40% (total); final exam---60%. The final course grade will be assigned on a curve (i.e., on a relative scale).

Course website:  
Problem sets, solution keys, announcements, etc. will be posted at  
sites.google.com/site/robertplieli
It’s your responsibility to check this site regularly.
Course schedule

(“W”=Wooldridge textbook)

1. Introduction (W 1; lectures 1-2)
   a. What is econometrics?
   b. Types of economic data
   c. Causality vs. correlation
   d. Introduction to Stata (seminar)
   e. Review of statistical concepts (seminar)

2. The simple/multiple linear regression model (W 2.1-2.5, 3; lectures 2-7)
   a. Model and assumptions (lecture 2-3)
   b. Ordinary least squares (OLS) estimator (lecture 4)
   c. Goodness-of-fit and R-squared (lecture 4)
   d. Logarithmic transformations (lecture 4-5)
   e. Properties of OLS (lecture 5-6)
   f. Omitted variables bias (lecture 7)
   g. Multicollinearity (lecture 7)
   h. Gauss-Markov theorem: efficiency of OLS (lecture 7)

3. Statistical inference (“finite sample”) for OLS (W 4; lectures 8-10)
   a. Review of basic concepts in hypothesis testing: significance level, p-values, etc. (lecture 8)
   c. Single parameter tests: “t test” (lecture 8-9)
   b. Confidence intervals (lecture 9)
   d. Multiple restriction tests: “F test” (lecture 10)

4. Asymptotic (“large sample”) theory for OLS (W 5.1-5.2, skip the LM statistic in 5.2; lecture 11)

5. Additional issues in regression analysis (lecture 12-15)
   a. Functional forms and selection of regressors (W 6.2-6.3; lecture 12)
   b. Dummy explanatory variables (W 7.1-7.4; lecture 12-13)
   c. Heteroskedasticity and weighted least squares (W 8.1-8.4, skip LM test in 8.2, skip White test in 8.3, 8.4; lecture 14)
   d. Dummy dependent variables: the linear probability model (W 7.5, lecture 15)