Econometrics 2

Module 4, 2020-2021

Tatiana Mikhailova
tmikhail@gmail.com

Course information

Course Website:

Instructor's Office Hours:

Class Time:

Room Number:

TAs: [Names and contact information]

Course description

This is a second part of the introductory econometrics sequence. The objective of the course is to familiarize students with basic concepts of econometric analysis.
During the course students learn how to apply econometric models to the various kinds of cross-sectional and panel data. The participants of the course will use STATA software and do practical exercises.

Course requirements, grading, and attendance policies

Students are assumed to have sufficient background in statistics, calculus, matrix algebra and have taken the econometrics-1 course. There are 14 lectures and 7 seminars. 5 problem sets will be given and will be counted for 20% of the final grade. The final written format A4 exam will give 80% of the final grade. The final exam lasts 3 hours and contains 4 problems. On the exam no exit is permitted but questions are allowed. The format A4 makeup exam lasts 2 hours and contains 2 problems. The second makeup is carried out in oral form.

Course contents

Week 1: Maximum likelihood estimation. Binary choice models. (WI Ch. 17, WA Ch. 15).

Week 2: Multiple choice models. Multinomial choice, Ordered choice. (WI Ch. 17, WA Ch.15).

Week 3: Censored models. Sample selection. (WI Ch. 17, WA Ch.16).

Week 4: Count data. Mixed models (WA Ch. 19).

Week 5: Panel and clustered data. Linear panel models. (WI Ch. 13, WA Ch.10).

Week 6: Within, between and GLS-estimators. (WI Ch. 14, WA Ch 10).

Week 7: Some advanced topics in panel data (WA Ch. 11).

Description of course methodology
A typical lecture includes a theoretical part on course material. During the second part of the lecture we discuss how a new econometric method can be applied for practical cases.

Sample tasks for course evaluation

1) Let *patents* be the number of patents applied for by a firm during a given year. Assume that the conditional expectation of patents given sales and RD is

$$E(patents|sales, RD) = exp(\beta_0 + \beta_1 \ln(sales) + \beta_2 RD + \beta_3 RD^2)$$

where *sales* is annual firm sales, and *RD* is total spending on research and development over the past 10 years.
How would you estimate the β_j? Justify your answer by discussing the nature of *patents*.
How do you interpret β_1?
Find the partial effect of *RD* on E(*patents|sales,RD*).
2) Suppose that the idiosyncratic errors in a standard panel model, $\{u_{it}: t =1,2,…, T\}$, are serially uncorrelated with constant variance.
Show that the correlation between adjacent differences, u_{it} and $u_{i,t-1}$, is -.5. Therefore, under the ideal FE assumptions, first differencing induces negative serial correlation of a known value.

Course materials

Required textbooks and materials

(WI – Wooldridge Introductory)"Introductory Econometrics: A Modern Approach" by Jeffrey Wooldridge (4th edition), South-Western Cengage Learning, 2009.

Additional materials

(WA – Wooldridge Advanced) Wooldridge, J. "Econometric Analysis of Cross Section and Panel Data", MIT Press, 2002 (WA)

Cameron, A. Colin and Pravin K. Triverdi "Microeconometrics: Methods and Applications", (8th edition), Cambridge University Press, 2009

Further references will be provided during the course.

Academic integrity policy

Cheating, plagiarism, and any other violations of academic ethics at NES are not tolerated.