Microeconometrics
Syllabus

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1 Lectures and Office Hours

- Lectures: Tuesdays 10:30–13:30. Room G-509
- Office Hours: Fridays 15:00–17:00. Room Zh-713.

2 Course description

Microeconometrics is a one-semester course designed for doctoral students at the Higher School of Economics. The main objective of the course is to prepare the students to do their own applied work. Students are encouraged to think of the course as a preparation toward their dissertation research project. The course covers standard econometric techniques to handle micro data. The prerequisites of the course are Statistics and Econometrics at an intermediate level. The knowledge of economic theory and computer-based information systems is necessary as well. The course is taught in English.

3 Teaching methods

The following methods and forms of study are used in the course:

- Lectures
- Practice in computer lab
- Self-study in computer lab (doing home assignments using Excel and STATA, working with economic data, doing research on the web)
- Self-study with literature

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4 Assessment

1. Homework Assignments
2. Midterm exam (80 minutes)
3. Written final exam (120 minutes)

Grade determination

This course includes one control work and one written final exam. The main form of control is the final exam at the end of the semester, which contributes 50% of the final grade. However, according to university regulations **passing the final exam is necessary in order to get a passing mark for the course**. The final grade is also partly determined by the midterm exam (35%), and the home assignments (15%).

The home assignments are going to be managed by the TA for the course, Eugenia Nazrullaeva (`n.eugenia@gmail.com`). You are expected to complete all assignments in time. No late homework will be accepted. Homework should be written in English.

5 Readings

Mandatory

1. Wooldrige, J. M. *Econometric Analysis of Cross Section and Panel Data*. The MIT Press, 2nd edition, 2010. (***WOO***)
2. Cameron, C.A. and Trivedi, P.K. *Microeconometrics: methods and applications*. Cambridge U.P., 2005. (***CT***)
3. Winkelmann, R. and Boes, S. *Analysis of Microdata*. Springer, 2006.
4. Angrist, J. and Prischke, J. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton Univ Press, 2009. (***AP***)

Additional Readings

1. Cameron, C.A. and Trivedi, P.K. *Microeconometrics Using STATA*. STATA Press, 2009.
2. Ruud P.A. *An Introduction to Classical Econometric Theory*. Oxford U.P., 2000.
3. Green, W.H. *Econometric Analysis*. Prentice-Hall, 2000.
4. Johnston J. and DiNardo, J. *Econometric Methods*. 4th Ed. McGraw-Hill 1997.
5. Morgan, S.L. and Winship, C. *Counterfactuals and Causal Inference: Methods and Principles for Social Research*. Cambridge U.P., 2007.
6. Kennedy, P. *A Guide to Econometrics*. The MIT Press, 2003.

Internet Resources and Databases

1. *Course website.* `sites.google.com/site/appmicroeconometrics`
2. *Data and Computer Programs for Cameron and Trivedi's textbook.* `www.econ.ucdavis.edu/faculty/cameron`.
3. *The Current Population Survey Main Page.* `www.census.gov/cps`.
4. *The Russian Monitoring Survey.* `http://www.cpc.unc.edu/projects/rlms`.

6 Course Outline

Introduction to Microeconometrics The FAQS of economics research. Causal Relationships. Experiments and Quasi-experiments. Identification and Statistical Inference. The Selection Problem. Distinctive aspects of microeconometrics. Cross Section and Longitudinal Data.
AP, Chapters 1–2. ***CT***, Chapters 1–3. ***WOO***, Chapter 1.

Building Blocks Conditional Expectation. Linear Projection. OLS. Asymptotic Theory.
AP, Chapter 3. ***WOO***, Chapters 2–3.

The Single Equation Linear Model Structural Models. Sources of endogeneity: omitted variables, measurement error, simultaneity. Asymptotic properties of OLS: consistency and asymptotic efficiency. Heteroscedasticity-robust inference.
AP, Chapter 3. ***CT***, Chapter 4. ***WOO***, Chapter 4.

Instrumental Variables Endogeneity. Reduced form equations. Exclusion restrictions. Rank condition. Two-stage least squares. Consistency and other asymptotic properties. Potential pitfalls. Local Average Treatment Effects.
AP, Chapter 4. ***CT***, Chapter 4. ***WOO***, Chapter 5.

System Estimation Seemingly unrelated regressions. Pooled panels. System OLS estimation. Asymptotic properties. Generalized Least Squares. ***WOO***, Chapter 7.

Linear Unobserved Effects Panel Data Models The omitted variable problem. Assumptions about the unobserved effects. Between and within variation. Random and fixed effects. Consistency. The Hausman Test.
AP, Chapter 5. ***CT***, Chapter 21. ***WOO***, Chapter 10.

Maximum Likelihood Modeling the conditional density function. Likelihood function. Consistency and other properties. Hypothesis and specification tests.
CT, Chapter 5. ***WOO***, Chapter 13.

Discrete Response Models Linear probability model. Latent variable models: the Probit and the Logit. Interpretation. Marginal Effects. Tests of hypothesis. Endogeneity problems. Unobserved effects probit. Multinomial response models. Ordered response models.
CT, Chapter 14–15. ***WOO***, Chapter 15.

Generalized Method of Moments General and optimal weighting matrices. Estimation under orthogonality conditions. Minimum distance estimation. Tests.
CT, Chapters 8 and 14. ***WOO***, Chapter 6.

Corner Solutions, Censored Regression and Sample Selection Models Top coding and data censoring. The Tobit. Expected values. The Inverse Mills ratio. Reporting results. Specification problems. Unobserved effects Tobit. Selected samples. Truncated regression. Heckman's model of selection.
CT, Chapter 16. ***WOO***, Chapter 16–17.

Estimating Average Treatment Effects Counterfactuals and self-selection. Methods to control control for selection: regression versus matching. Differences in differences and regression discontinuity.
AP, Chapter 6. ***CT***, Chapter 25. ***WOO***, Chapter 18.

Extensions to Panel Data Models Unobserved effects without exogeneity. Models with individual specific slopes. Hausman-Taylor models. Dynamic Models.
CT, Chapter 22. ***WOO***, Chapter 11.

7 Distribution of Hours

Week	Topic title	Lectures	Contact hours	Self-study
1	Introduction	2	2	6
2	Building Blocks	2	2	6
3	Single Equation Linear Model	2	2	8
4	Instrumental Variables	2	2	8
5	System Estimation	2	2	8
6–7	Linear Panel Data Models	4	4	16
8	Maximum Likelihood	2	2	8
9–10	Discrete Response	4	4	16
11	GMM	2	2	8
12–13	Corner Solutions...	4	4	16
14–15	Treatment Effects	4	4	16
16–17	Extensions to PD Models	4	4	16
	Total	34	34	126