

# APPLIED MICROECONOMETRICS

Fall 2022

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<b>Instructor:</b> Nicholas Giannakopoulos	<b>Time:</b> Friday 17:00 – 20:30
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## Course Pages:

1. <https://eclass.upatras.gr/modules/auth/opencourses.php?fc=14>
2. <https://sites.google.com/view/nicholasgiannakopoulos/>

**Office Hours:** Tuesday 12:00-14:00 and Friday 13:00-14:00 (Floor 1, N: 1.21), or after class, or by appointment (Email: [ngias@upatras.gr](mailto:ngias@upatras.gr), Tel.: 2610-962599)

**Objectives:** This is a one-semester course and is designed for graduate (M.Sc.) students specializing in empirical microeconomics with some basic knowledge in microeconomics and econometrics.

**Prerequisites:** Basic understanding of economic theory, probability, statistics, and linear algebra.

**Course Outline:** This course introduces students to empirical methods used in the analysis of cross-sectional and longitudinal microdata. Techniques primarily come from applications in labour economics, health economics and industrial organization. The two main objectives of the course are: (i) to familiarize students with widely used methods in applied microeconomics research in order to help them begin or further their own research projects and (ii) to provide students with hands-on experience applying these methods using a statistical software package.

## Textbooks:

1. Cameron, A. and Trivedi, P. (2005) *Microeconometrics: Methods and Applications*, Cambridge University Press.
2. Cameron, A. and Trivedi, P. (2010) *Microeconometrics Using Stata (Revised Edition)*, StataCorp LP.
3. Angrist Joshua D. and Steffen Pischke. (2009) *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press.
4. Wooldridge, Jeffrey M. (2010) *Econometric Analysis of Cross Section and Panel Data (Second edition)*. MIT Press.
5. Greene, W.H. (2011) *Econometric Analysis, (7th Edition)*, Pearson Prentice Hall: New Jersey.

## Grading Policy:

Homework .....	20%
Assignment #1 .....	10%
Assignment #2 .....	10%
Final .....	60%

**Important Dates:**

Assignment #1 .....	November 25, 2022
Assignment #2 .....	January 13, 2023
Final Exam .....	February 10, 2023

**Evaluation:**

- Students are required to complete a homework which will cover the material taught in lectures. Homework consists of either simple exercises/empirical work or presentation of a research paper. Students are encouraged to complete their project by making a pdf file of the final report which must be submitted by email to [ngias@upatras.gr](mailto:ngias@upatras.gr). You are strongly encouraged to consult with me throughout the term to receive guidance and feedback on your projects.
- Assignments will be distributed on November 18<sup>th</sup> 2022 and January 7<sup>th</sup> 2023, respectively. Assignments will involve manipulating a microdata set using Stata and techniques discussed in class. Datasets will be posted at [eclass/upatras.gr](https://eclass.upatras.gr). Students are responsible for finding resources to store the files and complete the data analysis. Stata is available on all the computers in the Department's computer lab. Assignments must be handed in at the beginning of the class. Late assignments will be assigned a grade of zero, with no exceptions.
- The final exam will be held during the exam period in February. Details on the format of the exam will be given in class. Should you be ill and can provide confirmation of illness to the instructor within 48 hours of the examination, arrangements to write a deferred exam can be made.

**Course Policy:**

- Please sign up to <https://eclass.upatras.gr>.

**Class Policy:**

- Regular attendance is essential and expected.

**Academic Honesty:** Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation.

**Hints on Writing an Empirical Research Project:**

The purpose of this empirical project is to conceptualize and execute a study in applied microeconometrics. You may have a topic in mind or you may work on a research idea after consultation with me. The entire paper should be 12-17 pages of text (excluding Tables and/or Figures). Tables and figures should be kept at minimum (e.g., 5-7 Tables and 3-4 Figures). The manuscript should generally follow this form:

1. Title page (1 page): Provide the title of the manuscript, your contact details and an abstract (max 150 words).
2. Introduction (1-2 pages): Identify a specific problem to be addressed and motivate why we should be interested about this issue. The last paragraph should briefly summarize your main empirical findings.
3. Theory (1-3 pages): In order to find the answer of the problem at-hand, provide a foundation on which to perform the empirical analysis. Present in brief the theoretical model by placing your emphasis on the hypotheses underlining the theoretical assumptions.
4. Empirical model (2-3 pages): The empirical model should consist of: (i) an equation (or set of equations) that follow directly from the theory (ii) a statement of properties of the variables (e.g., which are exogenous, which are endogenous) (iii) a statement of the properties of the error structure. You should also be very clear about expected signs and key hypothesis tests.
5. Data (2-3 pages): The main task of this section is to describe variable construction and data sources, such that any qualified person could replicate your work without consulting you. Discuss the relevant ways in which your data set is not the “ideal” one for performing your analysis and describe, if appropriate, how the econometric techniques are modified to accommodate this problem.
6. Empirical results (3-5 pages): Start with a general discussion of your empirical results. Provide evidence on how well you model(s) fit, the correspondence of signs with priors, specification issues, etc. Relate you results to the theory and hypotheses. The accompanying tables of results should be presented in a professional manner and be sufficiently self-contained, such that a reader can ascertain all relevant information from the tables without having to consult the text.
7. Conclusion (1 page): Summarize the research question and what the empirical evidence suggests. Provide several caveats and discuss fruitful avenues to extend this work in the future.
8. Bibliography: Provide a full list with the references included in the text (20-30 papers).

**Course outline:**

1. Introduction: Goals and structure of the course, learning aims & objectives, doing empirical analysis, process of project development (FAQs)
2. Basic regression analysis (OLS): Basic tools for regression analysis, interaction effects
3. Instrumental variables (IV): Endogeneity problem; instrumental variables; weak instruments; over-identification tests; testing for endogeneity and GMM
4. Panel data (A): Panel data structure: fixed and random effects models; Hausman test; Breusch- Pagan test; time dummies; clustering or panel-corrected standard errors
5. Panel Data (B): Dynamic panel data models: GMM estimators of linear dynamic panel data models; testing for instrument validity; serial correlation test
6. Discrete choice modeling: Binary probity and logit; computing marginal effects; goodness-of-fit; receiver operating characteristic analysis; Multinomial choice models; independence of irrelevant alternatives; ordered probit and logit
7. Count data models: Poisson model; over-dispersion test; negative binomial model; diagnostics and measure of fit; zero-inflated models
8. Limited dependent variables models: Censored data; Tobit models; marginal effects of Tobit models; sample selection models
9. Policy evaluation methods: Difference-In-Differences, regression discontinuity design

**Additional Reading List:**

Most of the articles can be downloaded at <http://www.jstor.org/>

1. Angrist, Joshua D. and Alan B. Krueger (1991) "Does Compulsory School Attendance Affect Schooling and Earnings?" *Quarterly Journal of Economics*, 106, 979-1014.
2. Angrist, Joshua D., Guido W. Imbens and Donald B. Rubin (1996) "Identification of Causal Effects Using Instrumental Variables", *Journal of The American Statistical Association*, 91, 444-455.
3. Angrist, Joshua D. and Victor Lavy (1999) "Using Maimonides' Rule to Estimate the Effect of Class Size on Scholastic Achievement" *Quarterly Journal of Economics*, 114, 533-575.
4. Ashenfelter, Orley and Alan Krueger (1994) "Estimates of the Economic Return to Schooling from a New Sample of Twins". *American Economic Review*, 84, 1157-1173.
5. Ashenfelter, Orley and David J. Zimmerman (1997) "Estimates of the Returns to Schooling from Sibling Data: Fathers, Sons, and Brothers", *Review of Economics and Statistics*, 79, 1-9.
6. Ashenfelter, Orley (1987) "The Case for Evaluating Training Programs with Randomized Trials", *Economics of Education Review*, 6, 333-338.
7. Caliendo, Marco and Sabine Kopeinig (2005), "Some Practical Guidance for the Implementation of Propensity Score Matching" *Journal of Economic Surveys*, 2008, 22(1), 31-72.
8. Card, David (1992) "Using Regional Variation in Wages to Measure the Effects of the Federal Minimum Wage", *Industrial and Labor Relations Review*, 46, 22-37.
9. Card, David (1990) "The Impact of the Mariel Boatlift on the Miami Labor Market", *Industrial and Labor Relations Review*, 43, 245-257.

10. Card, David (1995) “Using Geographic Variation in College Proximity to Estimate the Return to Schooling”, in *Aspects of Labor Market Behavior: Essays in Honor of John Vanderkamp L.N.Christofides E.K. Grant and R. Swidinsky* (Eds.), 201-222, Toronto, University of Toronto Press.
11. Card, David, Raj Chetty, and Andrea Weber (2007a). “Cash-on-Hand and Competing Models of Intertemporal Behavior: New Evidence from the Labor Market”, *Quarterly Journal of Economics*, 122(4), 1511-1560.
12. Card, David and Alan B. Krueger (1994), “Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania”, *American Economic Review*, 84, 772-793.
13. Dehejia, Rajeev H. and Sadek Wahba (1999) “Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs” *Journal of the American Statistical Association*, 94, 1053-1062.
14. DiNardo, John E. and Joern-Steffen Pischke (1997) “The returns to computer use revisited: Have pencils changed the wage structure too?”, *Quarterly Journal of Economics* 112, 291-303.
15. DiNardo, John and David Lee (2004), “Economic Impacts of New Unionization on Private Sector Employers: 1984-2001”, *Quarterly Journal of Economics* 119, 1383-1442.
16. Entorf, Horst, Michel Gollac and Francis Kramarz (1999) “New Technologies, Wages, and Worker Selection”, *Journal of Labor Economics*, 17, pp. 464-491.
17. Freedman, David A. (1991) “Statistical Models and Shoe Leather”, *Sociological Methodology*, 21, 291-313.
18. Gruber, Jonathan (1994) “The Incidence of Mandated Maternity Benefits”, *American Economic Review*, Vol 84, 622-641.
19. Imbens, Guido W. (2004) “Nonparametric Estimation of Average Treatment Effects Under Exogeneity: A Review” *Review of Economics and Statistics*, 86, 4-29.
20. Imbens, Guido W. and Thomas Lemieux (2008) “Regression Discontinuity Designs: A Guide to Practice” *Journal of Econometrics*, 142, 615-635.
21. Krueger, Alan B. (1993) “How computers have changed the wage structure: Evidence from microdata, 1984-1989”, *Quarterly Journal of Economics* 108, 33-60.
22. LaLonde, Robert J. (1986) “Evaluating the Econometric Evaluations of Training Programs with Experimental Data”, *American Economic Review* 76, 604-620.
23. Meyer, Bruce D. (1995) “Natural and Quasi-Experiments in Economics”, *Journal of Business & Economic Statistics*, Vol. 13, No. 2, 151-161.
24. Rosenbaum, Paul R. and Donald B. Rubin (1984) “Reducing Bias in Observational Studies Using Subclassification on the Propensity Score”, *Journal of the American Statistical Association*, 79,516-524.

### Classifying literature in the field of economics:

JEL Classification Codes Guide:

- <https://www.aeaweb.org/jel/guide/jel.php>

List of Journals:

- <https://ideas.repec.org/top/top.journals.simple.html>
- <http://www.scimagojr.com/journalrank.php?category=2002>