Lancaster University Management School

timberlake
statistics | econometrics | forecasting

ECON 613: Econometrics of Program Evaluation

COURSE AIMS & OBJECTIVES, KEY SKILLS AND LEARNING OUTCOMES

Course Aims & Objectives: This course will provide participants with the essential tools, both theoretical and applied, for a proper use of modern microeconometric methods for policy evaluation and causal counterfactual modelling. The course will cover various approaches, namely: Regression Adjustment (parametric and nonparametric), Matching (on covariates and on propensity score), Reweighting and Double-robust methods, Selection models, Instrumental-Variables approaches, Difference-in-Differences, and Regression Discontinuity Design.

Completion of Microeconometrics and Panel Data Econometrics (Core 3) is a prerequisite for taking this module.

Key Skills: By the end of this course, students should have knowledge and understanding of:

- Set up and manage a correct evaluation design, either under observable or unobservable selection.
- Identify, collect, and organize datasets for a correct ex-post program evaluation.
- Understand the theoretical underpinnings of the most widely studied econometric models for program evaluation, using mainly intuitive examples and graphical approaches.
- Select the appropriate methods to use and interpret results accordingly.
- Read and understand applications from different policy sub-fields, such as: finance and banking, the labour market, the investment activities of enterprises, education policy and regional cooperation, incentives for business research and development, etc.

Desired Outcomes: By the end of this course, students should be able to:

- Engage in abstract thinking by extracting the essential features of complex systems to facilitate problem solving and decision-making
- Communicate and present complex arguments in oral and written form with clarity and succinctness
- Present, interpret and analyse information in numerical form
- Utilise effectively statistical and other packages
- Apply basic statistical techniques to analyse economic and financial datasets
- Work effectively both individually and within a team environment.

COURSE STRUCTURE

Econ 613 is a 10 credits course and therefore students are expected to input approximately 100 hours of study into the course. The total number of contact hours on

Econ 613 is 15 hours. This leaves 85 hours for private study. Course Delivery comes in the form of Lectures with 15 hours delivered over the first 3 weeks of the term (10 hours of lectures and 5 hours of tutorials). There will be optional clinics on the last day of the course.

During your private study you should strike a balance between reading the course material (which is the primary source of information) and the recommended textbooks, thinking critically about how these fit in to the body of knowledge on the subject and about how our level of knowledge can be improved, performing exercises, completing coursework and revising for examinations. You can expect to perform well on this course only if you work consistently through the year.

COURSE CONVENOR

Dr Mathieu Lefebvre

LECTURERS CONTACT INFORMATION (Including Office Hours)

Email: mathieu-julien.lefebvre@univ-amu.fr

Available by appointment (please email to arrange a convenient time)

COURSEWORK ASSESSMENT

The CWA mark will be calculated as 100% coursework. The coursework will be assigned at the end of the course

The coursework will be delivered to students at the end of week 6 of each term and is due for submission at the end of week 10, allowing students 4 weeks for completion.

Coursework must be submitted electronically through the Moodle site for this course.

FEEDBACK ON COURSEWORK:

The coursework will be marked and returned to students within 4 weeks of the submission deadline. Feedback will consist of marker's notes appended to the pdf of your coursework.

MARKING CRITERIA AND PENALTIES

Marking criteria can be found in the Economics Undergraduate Handbook and the general course information paper. An electronic copy of this can be found via the Current Student page of the university website then follow the Academic Regulations link
https://gap.lancs.ac.uk/ASQ/QAE/MARP/Documents/UG-Assess-Regs.pdf

FINAL MARK INFORMATION

This course is assessed 100% by means of coursework. The final mark is the average of the marks obtained in the two pieces of coursework.

COURSE TEXT AND RECOMMENDED READING

Main texts

The main recommended textbook are

- Cerulli, G. (2012), An Assessment of the Econometric Methods for Program Evaluation and a Proposal to Extend the Difference-In-Differences estimator to dynamic treatment, in: Econometrics: New Developments, Nova Publishers, New York.
- Cerulli, G. (2015), Econometric Evaluation of Socio-Economic Programs: Theory and Applications, Springer.
- Cameron, A.C., & Trivedi P.K. (2005). Microeconometrics: Methods and Applications. Chapter 25. Cambridge: Cambridge University Press.
- Wooldridge, J.M. (2010). Econometric Analysis of cross section and panel data. Chapter 21. Cambridge: MIT Press.

Note Copies of the lecture slides will be made available on the course web pages. You **MUST** print off the notes for each lecture **prior to** attending. Solutions to exercises, and some additional material associated with these lectures and course announcements will also be placed on this website.

COURSE OUTLINE/LECTURE SCHEDULE

Day 1

Lecture 1: Introduction to the Econometrics of Program Evaluation I

- Econometrics of program evaluation: statistical background
- Experimental and non-experimental design
- The selection problem: observable and unobservable selection
- Assumptions and notation

Lecture 2: Introduction to the Econometrics of Program Evaluation II

- Regression Adjustment (parametric and nonparametric)
- Control-function regression

Day 2

Lecture 3: Applications using Stata I

- Use of the Stata 16 treatment-effects estimation package teffects
- Presentation of DO-files and ADO-files provided by the lecturer

Lecture 4: Applications using Stata II

- Application on real data of teffects subcommands
- Extensions by Stata user-written commands: ivtreatreg, treatrew

Day 3

Lecture 5: Matching Estimator

- Matching estimator: covariate and propensity score methods

Lecture 6: Reweighting and Double-Robust Estimator

- Reweighting estimator
- Double-robust estimator
- Summary of methods

Lecture 7: Applications using Stata I

- Use of the Stata 15 treatment-effects estimation package teffects
- Presentation of DO-files and ADO-files provided by the lecturer

Lecture 8: Applications using Stata II (1.5 hours):

- Application on real data of teffects subcommands
- Extensions by Stata user-written commands: pscore, psmatch2, treatrew

Day 4

Lecture 9: Econometrics of Program Evaluation under "Selection on Unobservables" I

- Summary of program evaluation under "observable selection"
- Statistical background: the endogeneity problem
- Assumptions and notation
- Selection models (Heckit)

Lecture 10: Econometrics of Program Evaluation under "Selection on Unobservables" II

- Instrumental variables approaches (IV) and LATE
- Difference-in-differences (DID)
- A primer into the Regression discontinuity design (RD)

Day 5

Lecture 11: Applications using Stata I

- Use of the Stata 15 treatment-effects estimation package teffects

- Presentation of DO-files and ADO-files provided by the lecturer

Lecture 12: Applications using Stata II

- Application on real data of teffects subcommands

Extensions by Stata the user-written commands: ivtreatreg, diff, rd, ted, rdrobust