

The Hebrew University of Jerusalem

Syllabus

ECONOMETRICS A - 71989

Last update 03-11-2024

HU Credits: 4

Degree/Cycle: 2nd degree (Master)

Responsible Department: Environmental Economics & Management

<u>Academic year:</u> 0

<u>Semester:</u> 1st Semester

Teaching Languages: English

<u>Campus:</u> Rehovot

<u>Course/Module Coordinator:</u> Dr. Avraham Ebenstein

Coordinator Email: ebenstein@mscc.huji.ac.il

<u>Coordinator Office Hours:</u> Wednesday, 15:00-17:00

Teaching Staff:

Dr. Avraham Ebenstein

Course/Module description:

This course is a graduate level introductory course in econometrics. It introduces students to some of the important quantitative techniques in economics and provides students with basic skills to conduct estimation of economic models and test relationships between variables. The course will focus on the ordinary least squares (OLS) estimator and its assumptions. We will analyze the instrumental variable (IV) estimator, which is used when one of the OLS assumptions fails and the generalized method of moments (GMM) estimator, which generalized the above estimators. Special topics including differences-in-differences and regression discontinuity will be discussed as well.

Course/Module aims:

Impart knowledge in various methods for economic models data analysis and practice their applications

Learning outcomes - On successful completion of this module, students should be able to:

Perform standard and multiple regressions Apply linear statistical models identify errors in equations Analyze economic models with serially correlated errors and panel data

<u>Attendance requirements(%):</u> 100

Teaching arrangement and method of instruction: Lectures and exercises

Course/Module Content:

1. Introduction and review of linear algebra, statistics, and probability

- 2. Least Squares Regression and its asymptotics
- 3. Inference
- 4. Instrumental Variables
- 5. Generalized Method of Moments
- 6. Maximum Likelihood
- 7. Differences in Differences
- 8. Regression Discontinuity

<u>Required Reading:</u>

To be announced at the course site

Additional Reading Material:

Amemiya, T. (1985). Advanced Econometrics, Harvard University Press.

Angrist, J. D. (1990). "Lifetime earnings and the vietnam era draft lottery: evidence from

social security administrative records", American Economic Review pp. 313-336.

Angrist, J. D. & Keueger, A. B. (1991). "Does compulsory school attendance affect schooling and earnings?", Quarterly Journal of Economics 106(4), 979-1014.

Angrist, J. D. & Pischke, J.-S. (2008). Mostly Harmless Econometrics: An empiricist's companion, Princeton University Press.

Billingsley, P. (1986). Measure and Probability. John Willey and Sons.

Bound, J. & Jaeger, D. A. (1996). "On the validity of season of birth as an instrument in wage equations: A comment on Angrist & Krueger's 'Does compulsory school attendance affect schooling", Technical report, National Bureau of Economic Research.

Bound, J., Jaeger, D. A. & Baker, R. M. (1995), "Problems with instrumental variables

estimation when the correlation between the instruments and the endogenous explanatory variable is weak", Journal of the American Statistical Association 90(430):443-450.

Cameron, A. C. & Trivedi, P. K. (2005), Microeconometrics: Methods and Applications, Cambridge University Press.

Chen, Yuyu, Avraham Ebenstein, Michael Greenstone, and Hongbin Li. 2013. "Evidence on the Impact of Sustained Exposure to Air Pollution from China's Huai River Policy." Proceedings of the National Academy of Sciences USA August 6th; 12936-41.

Greene, W. H. (2003), Econometric analysis, Pearson Education India.

Hansen, B. E. (2014), Econometrics.

Hayashi, F. (2000), Econometrics. Princeton University Press.

Hogg, R., McKean, J. & Craig, A. (n.d.). 2005. "Introduction to mathematical statistics."

Jensen, R. (2012), "Do labor market opportunities affect young women's work and family decisions? Experimental evidence from India", Quarterly Journal of Economics 127(2), 753-792.

LaLonde, R. J. (1986), "Evaluating the econometric evaluations of training programs with experimental data", American Economic Review pp. 604-620.

Newey, W. K. & McFadden, D. (1994), "Large sample estimation and hypothesis testing", Handbook of Econometrics 4, 2111-2245.

Ogaki, M., Jang, K., Lim, H., Bae, Y. & Imutra, Y. (2003), "Structural macroeconometrics", The Ohio State University.

Rencher, A. C. & Schaalje, G. B. (2008), Linear models in statistics, John Wiley & Sons.

Stock, J. H. & Watson, M. W. (2003), Introduction to Econometrics, Vol. 104, Addison Wesley Boston.

Wooldridge, J. M. (2002), The Econometrics of Cross Section and Panel Data, MIT Press.

<u>Grading Scheme:</u> Written Exam % 50 Submission assignments during the semester: Exercises / Essays / Audits / Reports / Forum / Simulation / others 50 %

<u>Additional information:</u> All homework assignments must be submitted on time