University of Colorado at Boulder
Department of Economics

Methodological Issues in Econometrics

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Economics 8838
Syllabus
Spring 2007

Course Description

Econ 8838 is an advanced level econometrics course. It focuses on methodological issues in econometrics. (See the outline below for topics covered.) The aim of this class is to increase the student's knowledge in these areas and to advance the student's critical thinking and ability to form an academic argument. There will be a heavy focus on the writing of an original research paper.

Assessment

1. Original research paper. **Due April 26, 2007** Further details will be handed out separately. 35 points

2. Midsemester Exam: **March 15, 2007** 20 points

3. Final Exam: 35 points

4. Class participation: 10 points

Classroom Behavior

Students are expected to behave in accordance with the University of Colorado at Boulder policies of classroom behavior. For any questions regarding what these are, students are refered to http://www.colorado.edu/policies/index.html. Clearly, plagarism, cheating or harrassment will not be tolerated.

Religious Observance

Campus policy regarding religious observances requires that faculty make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, I ask that you let me know of a conflict with at least one week's notice, so I can work out an alternative arrangment. See full details of the Univerisity Policy at http://www.colorado.edu/policies/fac_relig.html.

Topic Outline

1. Estimating the Linear Model.
Why is OLS so popular? What else is there? What advantages are there from moving away from the class of unbiased estimators? What makes one estimator "better" than another?

This unit provides a focused look at LS, LAD and the James Stein estimators, and the associated risk and loss functions, with the aim of getting students to form their own opinions of what makes a "good" estimator.

Readings:
Lecture Notes

Suggested Further Reading:
Huber, P.J. (1981) *Robust Statistics* New York, Wiley

Judge, G. and M. Bock (1983), "Biased Estimation", in Griliches, Z. and M. Intriligator (eds) *Handbook of Econometrics (Vol1)* , North Holland, Amsterdam

Phillips, P.C.B. (1984), "The Exact Distribution of the Stein-Rule Estimator", *Journal of Econometrics*, 25(1), pp121-131.

Rao, C. Radhakrishna (1976), "Estimation of Parameters in the Linear Model", *The Annals of Statistics*, 4(6), pp. 1023-1037

2. Structural vs Reduced Form
The traditional position of the Cowles school has been for the use of structural econometric models based on underlying economic theory. In response to this, Sims has led the "let the data speak" school, using VARs, objecting to the incredible assumptions required in identifying the structural models.

This unit covers the structural and reduced form models, and the estimation issues associated with each. We will focus on the identification issues associated with the structural model, the Fair macroeconometric model, the time series techniques introduced by Sims to relax these indentification assumptions, and methods used to assess which is a better model. Students are encouraged to form their own opinion as to which is more useful as a modelling tool.

Reading
Fair, Ray C. and Robert J Shiller (1990) "Comparing Information in Forecasts from Econometric Models", *American Economic Review* 80(3), 375-389

Nelson, C (1972) "The Prediction Performance of the FRB-MIT-Penn Model of the U.S. Economy", *American Economic Review*, 62(5), 902-917

Suggested Further Reading:
Heckman, J (2000) "Causal Parameters and Policy Analysis in Economics: A Twentieth Century Retrospective", *Quarterly Journal of Economics*, 115(1), 45-97

Sims, C. (1980) "Macroeconomics and Reality", *Econometrica*, XLVIII, 1-48

3. The Bootstrap procedure

The boostrap procedure is a method of estimating the sampling distribution of an estimator. The bootstrap is more accurate in finite samples than the first order asymptotic approximations.

Given this, why don't we use bootstrap all the time? What are the disadvantages of the bootstrap?

This unit explores the method of bootstrap, relative to the more traditional method of calculating the asymptotic distribution of the estimator.

Reading:

Horowitz, J (1997)"Bootstrap Methods in Econometrics: Theory and Numerical Performance" in Kreps, D. and K. Wallis *Advances in Economics and Econometrics: Theory and Applications Vol III*, Seventh World Congress, Cambridge and New York, Cambridge University Press

Suggested Further Reading:
Horowitz, J (2001) "The Bootstrap", in J. Heckman and E. Leamer (eds) *Handbook of Econometrics Vol 5*, pp3159-3228, North-Holland, Amsterdam