

BOSTON COLLEGE

Department of Economics

EC 771: Econometrics

Prof. Christopher Baum

Spring 2010

<http://fmwww.bc.edu/EC-C/S2010/771/>

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Hours: by arrangement; email anytime

Objectives: This course provides the required Ph.D. level introduction to econometric theory and methods. It takes as prerequisite the fundamentals of mathematics and mathematical statistics addressed in EC 770, and outlined in Appendices A, B, C and D of the textbook. EC 771 presents the fundamentals of OLS regression analysis and provides an introduction to several major techniques widely used in applied econometric work: the generalized method of moments, estimation of simultaneous equations, and selected panel data estimators. Some emphasis will also be placed on Monte Carlo experiments, bootstrapping and the analysis of large data sets. The course is designed to build a solid base of theoretical understanding, and exercise this theory with economic applications, providing a base of practical knowledge.

Required text: W. Greene (G), *Econometric Analysis*, 6th ed., 2008 (5th ed. generally usable).

Recommended text: C.F. Baum (B), *An Introduction to Modern Econometrics Using Stata*, Stata Press (<http://stata-press.com>), 2006. On reserve at O'Neill Library.

Course requirements: 40% final examination; 30% midterm examination; 30% graded homework assignments. No makeup examinations will be given, and homework assignments will not be accepted after their due dates. While it is recommended that you work together in groups and learn from each other, it is necessary that you attempt each problem—including empirical exercises—yourself, and turn in individual answers; group solutions are unacceptable. The Boston College policy on academic integrity appears at <http://www.bc.edu/integrity>.

Homework assignments will require you to become familiar with the Stata statistical software (version 10.1 or 11), which is available on all departmental Mac OS X systems. You are expected to develop proficiency in elementary programming of this econometric package. Empirical assignments which develop intuition for applied econometric work as well as econo-

metric programming skills are an important part of the course. Handouts providing assistance with Stata programming will be provided. Personal copies of Stata for OS X, Windows or Linux are available at reduced cost through the Stata GradPlan; see course homepage for details.

You are encouraged to develop familiarity with L^AT_EX for course assignments. Although assignments need not be word processed, using L^AT_EX is a necessary skill for economics Ph.D. students, and this is a good time to practice. All departmental Mac OS X systems are equipped with TeXShop, which is freely available for download to personal machines. If you have a personal Windows machine, check out MikTeX and WinEDT. If you have a personal Linux machine, check out LyX. All are freeware/shareware, and .tex files are freely interchangeable among all operating systems. Scientific Word/Workplace is **not** recommended, as it creates non-portable files; but any L^AT_EX program (including the latter) strictly dominates Microsoft Word, which should not be used for scientific papers.

Schedule: The course will meet for 28 two-hour (10:00–11:50 AM) sessions from Tuesday 19 January through Thursday 6 May. **No class meeting on Thursday 22 April.** The midterm is tentatively scheduled for Tuesday, 16 March.

Topics (not all chapter sections will be covered):

1. Classical linear regression	G 2, 3; B 4
2. Properties of LS and IV estimators	G 4, 5; B 8
3. Inference and prediction	G 6; B 4
4. Functional form and structural change	G 7; B 5
5. GLS and GMM	G 10, 18; B 8
6. Heteroskedasticity and serial correlation	G 11,12; B 6
7. Monte Carlo simulation and bootstrapping	G App E.1-E.4 Stata online help: <code>simulate</code> , <code>bootstrap</code>
8. Maximum likelihood estimation	G 17; B App. B Stata online help for <code>ml</code>
9. Systems estimation	G 14
10. Panel data estimators	G 13; B 9
11. Limited dependent variable models	G 21, 22; B 10

Additional readings (see course homepage)