

BOSTON COLLEGE  
Department of Economics

EC 729 : Applied Econometrics  
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This course is the third in the "old" three-course sequence of statistics and econometrics courses required for all Ph.D. students in economics (except for those electing to substitute EC 821 and EC822). EC 727-728 (or equivalent) are prerequisite to this course.

The rationales for a required course in Applied Econometrics include the breadth of econometric techniques which have become commonplace in empirical research, and have found their way into many Ph.D. students' dissertations. A second rationale is the need for dissertation-bound students to familiarise themselves with a wider variety of empirical research techniques than those they practice in EC 728. Many student researchers find themselves lacking practice with econometrics software beyond the basics of a single computer package, or data sets beyond the "canned" variety, at the empirical stage of their dissertation. This is decidedly not the ideal time to first become acquainted with a new econometric package, or first deal with the issues related to extremely large data sets, or magnetic tapes. Thus, the course will attempt to provide a wide variety of hands-on experience with a variety of advanced econometric techniques, via several econometric software packages, and with the utilisation of "large" data sets in cross-section, time-series, and pooled CS/TS contexts.

**Course Requirements:** There are no examinations or graded homework assignments. One hundred per cent of the grade in EC 729 depends upon **two brief, concise research papers**, on topics of your choice, which utilise one or more advanced econometric techniques, to be written in the style of an article for submission to a professional journal. The first paper **must** make use of either pooled cross section / time-series data and the attendant techniques, **or** must utilise a cross-sectional data set with limited dependent variable methodologies. The second paper **must** make use of time-series data, and must involve nonlinear estimation, time-series modelling, and/or systems estimation and simulation. Deadlines will be announced for preparation of **paper proposals**, which must outline the issues to be researched, some of the relevant economic literature, the data required, and the methodology and software to be utilized. These proposals must be completed and approved in a timely fashion to receive full credit for the paper. Exercises will not be graded, but you are expected to take them seriously.

(over)

The basic texts will be Hsiao, *Analysis of Panel Data*; Maddala, *Limited-Dependent and Qualitative Variables in Economics*; Banerjee et al., *Cointegration, Error-Correction and the Econometric Analysis of Non-Stationary Data*; and selected articles. A good discussion of many of these topics is also to be found in North-Holland's four-volume *Handbook of Econometrics* (Hbk).

Extensive use will be made of the RATS package on the Alpha AXP and fmrisc platforms (Version 4.20), for which you will need access to a manual, available from the Department. We may also make use of the Stata package (available on fmrisc and, soon, on desktop machines in C-138). Familiarity with the Alpha and fmrisc computer systems, including rudiments of the OpenVMS and AIX operating systems and editors, is assumed. Other items needed (such as procedures for Ingres database and/or magtape usage) will be provided. Data sets for demonstrations and exercises may be drawn from COMPUSTAT (firm-level data), CRSP (stock price, returns and government bond data), CITIBASE (macro data), I.F.S. (international and domestic macro data), ISDB (international sectoral data), P.S.I.D. (household panel data), SCF (household data), and HALLMFG (firm panel data).

### **Overview of Topics**

1. Pooled cross-section time-series models and panel data (Hsiao; Hbk 21, 22, 28, 29)
2. Qualitative dependent variables (Maddala; Hbk 24, 27)
3. Modelling economic time series (Banerjee; Hbk 17-19, 45-49)
4. Nonlinear estimation (NLLS, maximum likelihood) (Banerjee; Hbk 6, 12)