

Syllabus: Applied econometric research methods using Stata
CF Baum (Boston College and DIW Berlin)
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Objective: This short course is designed to provide applied researchers with a sound understanding of Stata's capabilities for data management and statistical analysis, focusing on linear regression methodologies, drawing upon Baum (2006).¹ Lectures 3 and 4 are devoted to presenting effective use of Stata programming techniques to automate the workflow and develop capabilities that extend the program's usefulness, incorporating the use of the Mata matrix programming language to gain computational efficiency. These topics are based upon Baum (2009).²

Lecture 1: OVERVIEW OF STATA'S DATA MANAGEMENT CAPABILITIES

- User interface, help system, file management, working with do-file editor
- Updating program and accessing user-written routines
- Data management: basic principles of organization and transformation
- Data management tools and data validation
- Producing publication-quality output and graphics
- Strategies for data cleaning and transformation
- Tools for combining and reshaping data sets
- Strategies for reuse of intermediate results
- Strategies for report and graphics automation

¹CF Baum, *An Introduction to Modern Econometrics using Stata*, 2006: Stata Press.

²CF Baum, *An Introduction to Stata Programming*, 2009: Stata Press.

Lecture 2: REGRESSION, FACTOR VARIABLES, MARGINAL EFFECTS, INSTRUMENTAL VARIABLES, GMM

- Basics of regression methodology
- Estimation with factor variables
- Regression diagnostics, predictions
- Computing and interpreting marginal effects
- IV-GMM modeling and diagnostics
- GMM estimation

Lecture 3: INTRODUCTION TO PROGRAMMING IN STATA

- Why learn to program in Stata?
- Programming with do-files
- Do-file programming: recipes
- Programming with ado-files
- Ado-file programming: developing a Stata command

Lecture 4: ADVANCED PROGRAMMING IN STATA

- Programming ml, nl, nlsur, gmm function evaluators
- Programming egen functions
- Introduction to Mata
- Mata programming: interfacing with Stata
- Mata programming: recipes