Econometrics

Undergraduate course syllabus by Aaron Medlin

Course description

This course focuses on equipping students with the fundamental concepts and tools of econometric analysis. The course covers statistical techniques used in the estimation, testing, and forecasting of economic models.

Topics include single-independent-variable and multivariate linear regression, hypothesis testing, and issues like multicollinearity, autocorrelation, and heteroskedasticity. Additional topics include dummy dependent variable techniques, methods for dealing simultaneity bias, and the basics of dealing with time-series and panel data.

Emphasis is placed on practical application, enabling students to apply econometric methods to real-world data. The course also introduces students to econometric software, preparing them to conduct empirical research in economics and related fields. This course is essential for students pursuing economics, finance, or data analysis careers, providing a foundation for understanding and analyzing economic data.

Course objectives

- Fit, graph, understand, and evaluate linear and generalized linear models. Use these model fits to make predictions and inferences about quantities of interest
- Define the assumptions and limitations of different regression approaches to answering typical research questions in the social sciences, particularly with respect to questions of causality
- Produce a clear, convincing and accurate report that summarizes the findings from your statistical analysis
- Organize your statistical analysis so that other users can reproduce your findings

Texts

- Using Econometrics: A Practical Guide (7 ed.) by A.H. Studenmund
- An Introduction to Modern Econometrics Using Stata by Christopher F. Baum

Course outline

- 1. Introduction to Econometrics Concepts
- 2. Simple Linear Regression
- 3. Multiple Regression Analysis: Estimation
- 4. Multiple Regression Analysis: Inference
- 5. Topics in Regression Analysis: Functional Forms, Dummy Variables, Heteroskedasticity, Serial Correlation
- 6. Introduction to Time Series Analysis
- 7. Advanced Regression Topics: Dependent Dummy Variable Techniques, Simultaneity and IV methods, Selection Bias, Panel data