YILDIZ TECHNICAL UNIVERSITY
DEPARTMENT of ECONOMICS

ECONOMETRICS II
(Group 1, Tuesday 10.00-12.50)
(2021-22 Spring Semester)

Syllabus

Instructor: Prof. Dr. Hüseyin Taştan
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Classnotes: https://github.com/htastan/Econometrics-II
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Office Hours: Tuesdays 14.00-16.00
Course assistant: tba

SCOPE and PURPOSE

This course is the second part of the Econometrics sequence. The purpose of this course is to teach fundamental methods of analysis in econometrics at the introductory level. In the first part, Econometrics I, offered in the Fall semester, we covered the classical linear regression model within the context of cross-sectional data and examined various extensions. Problems and issues arising in the regression analysis using time series data, such as trends, seasonality, non-stationarity, unit roots, etc., were left to the second part of the econometrics sequence. Econometrics II will particularly focus on the regression analysis with time series data and panel data. Topics in Econometrics II include the classical linear regression model (CNLRM) using matrix algebra, the properties and the nature of time series data, stationarity and dependency, unit roots and cointegration and panel data models.
Econometrics software: We will use R in class and in lab sessions. R is an open-source software for statistical computing and graphics which is widely used by statisticians, researchers, data scientists and econometricians as well as industry professionals. The latest version of R can be downloaded from:
https://www.r-project.org/
And R-studio may be used as an integrated development environment for R:
https://www.rstudio.com/products/RStudio/

PREREQUISITES

- You need to pass Econometrics I and Statistics I-II; also basic knowledge of algebra and calculus at the college level (Maths I-II).

TEXTBOOK

- J.M. Wooldridge (**W**), *Introductory Econometrics: A Modern Approach*, 6th ed., 2016, Cengage Learning. (This is the main text)
  R applications based on the Wooldridge's text:
- F. Heiss (**H**), *Using R for Introductory Econometrics*, 2016, CreateSpace.
  Online version and other materials available at: http://www.urfie.net/

ADDITIONAL MATERIALS

- Class notes
- J. H. Stock and M.W. Watson (**SW**), *Introduction to Econometrics*, 3rd ed., 2015, Pearson.

EVALUATION

Midterms: 60% (there will be two midterms 30% each), Final: 40%

CLASS SCHEDULE

Week (Date)	Topics (**W:** Wooldridge**, H:** Heiss**, SW:** Stock and Watson**)**	Preparation
1 (March 1)	Review of Econometrics I; Review of Matrix Algebra; Linear Regression Model in Matrix Form	**W**: Appendix D and E
2 (March 8)	Linear Regression Model in Matrix Form (cont'd), Classical assumptions using matrix form, Properties of OLS estimators	**W**: Appendix D and E
3 (March 15)	Introduction to time series data, the nature of time series, basic concepts in time series analysis, Trends and seasonality, Forecasting	**W**: ch. 10, **H**: ch.10 **SW**: ch.14
4 (March 22)	Regression analysis using time series data, Finite sample properties of OLS estimator	**W**: ch. 10 **H**: ch.10
5 (March 29)	Regression analysis using time series data, cont.'d	**W**: ch. 10-11 **H**: ch.10
6 (April 5)	Further issues in regression analysis, stationarity and weak dependence, Moving Average (MA) process, AR process	**W**: ch. 11 **H**: ch.11
7 (April 12)	Further issues in regression analysis (cont.'d), asymptotic properties of OLS estimators, Highly persistent time series	**W**: ch. 11 **H**: ch.11
8 (April 19)	**Midterm 1** (exact date and time to be announced later)	
9 (April 26)	Serial correlation in time series regressions, autocorrelation tests	**W**: ch. 12 **H**: ch.12
10 (May 3)	Serially correlated errors, GLS estimation, Heteroscedasticity in time series models, ARCH and GARCH models	**W**: ch. 12
11 (May 10)	Detecting nonstationarity, Unit root tests,	**W**: ch. 18 **H**: ch.18 **SW**: ch.14
12 (May 17)	**Midterm 2** (exact date and time to be announced later)	
13 (May 24)	Regression analysis using nonstationary variables, Cointegration, Vector Autoregression (VAR) model, Error correction model (ECM)	**W**: ch. 18 **H**: ch.18 **SW**: ch.16
14 (May 31)	Introduction to Panel Data Models, Natural experiments, Difference-in-differences	**W**: ch. 13 **H**: ch.13 **SW**: ch.13
15	**Final Exam Week**	