YILDIZ TECHNICAL UNIVERSITY
DEPARTMENT of ECONOMICS

ECONOMETRICS II
(Group 2, Wednesday 10.00-12.50)
(2020-21 Spring Semester)

Syllabus

Instructor: Prof. Dr. Hüseyin Taştan
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Classnotes: https://github.com/htastan/Econometrics-II
Office: Davutpaşa Campus, IIBF/G2-205
Office Hours: by appointment (please send an email)
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 10)	Review of Econometrics I; Review of Matrix Algebra; Linear Regression Model in Matrix Form	**W**: Appendix D and E
2 (March 17)	Linear Regression Model in Matrix Form (cont'd), Classical assumptions using matrix form, Properties of OLS estimators	**W**: Appendix D and E
3 (March 24)	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 31)	Regression analysis using time series data, Finite sample properties of OLS estimator	**W**: ch. 10 **H**: ch.10
5 (April 7)	Regression analysis using time series data, cont.'d	**W**: ch. 10-11 **H**: ch.10
6 (April 14)	Further issues in regression analysis, stationarity and weak dependence, Moving Average (MA) process, AR process	**W**: ch. 11 **H**: ch.11
7 (April 21)	Further issues in regression analysis (cont.'d), asymptotic properties of OLS estimators, Highly persistent time series	**W**: ch. 11 **H**: ch.11
8 (April 28)	**Midterm 1** (exact date and time to be announced later)	
9 (May 5)	Serial correlation in time series regressions, autocorrelation tests	**W**: ch. 12 **H**: ch.12
10 (May 12)	Serially correlated errors, GLS estimation, Heteroscedasticity in time series models, ARCH and GARCH models	**W**: ch. 12
11 (May 19)	Detecting nonstationarity, Unit root tests,	**W**: ch. 18 **H**: ch.18 **SW**: ch.14
12 (May 26)	**Midterm 2** (exact date and time to be announced later)	
13 (June 2)	Regression analysis using nonstationary variables, Cointegration, Vector Autoregression (VAR) model, Error correction model (ECM)	**W**: ch. 18 **H**: ch.18 **SW**: ch.16
14 (June 9)	Introduction to Panel Data Models, Natural experiments, Difference-in-differences	**W**: ch. 13 **H**: ch.13 **SW**: ch.13
15	**Final Exam Week**	