

Course Outline

Department of Economics
School of Business and Economics

ECON 4320-3
Econometrics (3,0,0)

Calendar Description

Students are introduced to econometric models and the application of classical regression techniques to estimate socio-economic relationships. Topics include an introduction to econometrics; simple linear regression; interval estimation and hypothesis testing; predictions, goodness of fit, and modeling issues; multiple regression; non-linear relationships; heteroscedasticity; dynamic models, 284 autocorrelation, and forecasting; simultaneous equations; and qualitative dependent variables. General econometric computer software is used to reinforce course concepts.

Educational Objectives/Outcomes

After completing this course, students should be able to:

1. Demonstrate the econometric estimation process.
2. Test the significance of estimated coefficients and econometric models.
3. Identify problems relating due to collinearity, autocorrelation, and heteroskedasticity.
4. Estimate nonlinear economic relationships, including interaction between continuous variables, and nonlinear functional forms.
5. Use categorical independent variables in estimating economic and other relationships.
6. Estimate basic simultaneous systems of equations.
7. Estimate models with qualitative dependent variables and interpret their outcomes.
8. Apply the estimation techniques and procedures to various fields within business such as marketing, finance, supply chain management, and economics using real-world data and appropriate econometric software.

Prerequisites

ECON 2330 or ECON 3330 or equivalent

Co-requisites

Texts/Materials

Hill, Griffiths, and Lim, Principles of Econometrics, 4th Edition, Willey & Sons, 2012.

Hill, Griffiths, and Lim, Using Eviews® for Principles of Econometrics, 4th Edition, Willey & Sons, 2012.

Student Evaluation

Participation	0-20%
Assignments/quizzes	0-20%
Project	0-25%
Midterm(s)	30-60%
Final exam	30-50%

Course Topics

1. Introduction to Econometrics
 - Why study econometrics?
 - What is econometrics about?
 - The econometric model
 - Economic data types
 - Research process
2. The Simple Linear Regression Model
 - Economics model
 - Econometric model
 - Estimating the regression parameters
 - Assessing the least squares estimators
 - Probability distribution of the least squares estimators
 - Estimating the variance of the error term
3. Interval Estimation and Hypothesis Testing
 - Interval estimation
 - Hypothesis tests
 - Rejection regions for specific alternatives
 - Examples of hypothesis tests
 - P-value
4. Predictions, Goodness of Fit, and Modeling Issues
 - Least squares prediction
 - Measuring goodness of fit
 - Modeling issues
 - Log-linear models
5. Multiple Regression Model

- Introduction
 - Estimating the parameters of the multiple regression model
 - Sampling properties of the least squares estimator
 - Interval estimation
 - Hypothesis testing for a single coefficient
 - Measuring goodness-of-fit
6. Further Inference in the Multiple Regression Model
- F-Test
 - Testing the significance of a model
 - Testing some economic hypotheses
 - Use of nonsample information
 - Model specification
 - Poor Data, collinearity, and insignificance
7. Nonlinear Relationship
- Polynomials
 - Dummy variables
 - Applying dummy variables
 - Interactions between continuous variables
 - Log-linear models
8. Heteroscedasticity
- Nature of heteroscedasticity
 - Using the LS estimator
 - GLS estimator
 - Detecting heteroscedasticity
9. Dynamic Models, Autocorrelation and Forecasting
- Introduction
 - Lags in the error terms: autocorrelation
 - Estimating an AR(1) error model
 - Testing for the autocorrelation
 - Introduction to forecasting: autoregressive models
 - Finite distributed lags
 - Autoregressive distributed lags models
10. Simultaneous Equation Models
- Supply and demand Model
 - Reduced form equations
 - Failure of LS
 - Identification Problem
 - Two-stage LS, 2SLS Estimation
 - Examples of 2SLS estimation

11. Qualitative Dependent Variable Models

- Models with binary dependent variables
- Linear probability model
- Probit model
- Logit model for binary choice
- Ordered choice models

Methods for Prior Learning Assessment and Recognition

As per TRU policy.

Attendance Requirements – Include if different from TRU Policy

As per TRU policy.

Special Course Activities – Optional

Use of Technology – Optional