

THE UNIVERSITY OF THE WEST INDIES, MONA
ECON3049: Econometrics I

Semester I, 2020-21

Pre-requisites: ECON2008 or M20B, ECON3031, ECON2019, ECON2000-4

Anti-requisites: MATH3341

Lecturer: Andre Haughton, PhD

Description

This course will provide an introduction to the econometric methods frequently used to analyze data. The course focuses on the linear regression model and more specifically, the ordinary least squares (OLS) estimation procedure. As an introduction we will review the basic statistical procedure; review of basic random variables, simple descriptive statistics and the concept of the null hypothesis. The course will teach students how to use the t-tests and F-tests to make inferences about the estimated parameters and what diagnostic tests are available to test some of the assumptions of the simple OLS model.

Learning Outcomes

Upon successful completion of this course, students should be able to:

- Outline the Assumptions necessary for the linear regression model to hold.
- Use the linear regression model and the econometric methods developed for the linear regression model to conduct simple econometric investigations of an empirical issue of interest.
- Understand and assess critically empirical findings reported in the applied economics literature.
- Improve their problem-solving analytical and deductive skills.

Modes of Delivery

Two lecture hours and one tutorial hour per week. Problem sets (not for grading) will be provided for practice at problem solving.

Assessment

Assignments – 20%, Mid-Semester Exam – 30% and Final Exam – 50%

Assignment and Exams time and dates to be announced

Syllabus

Introduction and Review of Statistics

- Populations,
- Parameters,
- Random Sampling,
- Finite Sample Properties of Estimators

The Simple Regression Model

- Review of some basic operators,
- nature of Econometrics and Economic Data,
- Definition of the Simple Regression Model,
- Deriving the Method of Moments and Ordinary Least Squares Estimates

Properties of the OLS Estimators

- Goodness of fit,
- The Expected Value of the OLS Estimators,
- The Variance of the OLS Estimators,
- Efficiency of OLS: The Gauss-Markov Theorem.

Multiple Regression Analysis: Estimation

- Limitations of the simple linear regression model
- Motivation for Multiple linear Regression model
- Procedure and Interpretation of Ordinary Least Squares

Regression Analysis: Inference I

- Sampling distributions,
- Hypothesis Testing; t-tests,
- Normality assumptions,
- Confidence intervals
- P-values

Regression Analysis: Inference II & OLS Asymptotes

- Testing hypothesis about a linear combination of parameters,
- Testing multiple linear restrictions and OLS Asymptotics

Further Issues

- Effects of Data Scaling on OLS Statistics,
- Functional Form including logs,
- Prediction
- Residual Analysis

Binary or Dummy Variables

- Describing Qualitative Information
- Single Dummy Independent Variables,
- Using Dummy Variables for Multiple Categories,
- Interactions Involving Dummy Variables,
- Binary Dependent Variables

Specification Problems

- Omitted Variables,
- Irrelevant Variables
- Multicollinearity

Violation of Classical Assumptions

- Autocorrelation
- Heteroskedasticity

Resources

Prescribed

Wooldridge, J.M., 2009. Introductory Econometrics: A Modern Approach, 4th edition, South-Western.

Recommended

Gujarati, D.N., 2003. Basic Econometrics, 4th edition, McGraw-Hill, Inc.

Ramanathan, R., 2002. Introductory Econometrics with applications, 5th edition, Harcourt College Publishers.