Course Name: Econometrics II

Course Code: Econ 2062

Prerequisite: Econ 2061

Course Description:

This course is a continuation of *Econometrics I.* It aims at introducing the theory (and practice) of regression on qualitative information, time series and panel data econometrics as well as simultaneous equation modelling. It first makes an introduction to the basic concepts in qualitative information modelling such as dummy variable regression and binary choice models (LPM, Logit and Probit). Elementary time series models, estimations and tests for both stationary and non-stationary data will then be discussed. It also covers introduction to simultaneous equation modelling with alternative estimation methods. Introductory pooled cross-sectional and panel data models will finally be highlighted. All of these theoretical concepts will also be complemented by computer lab practicals using statistical packages such as STATA, EViews, PcGive, etc. applied on available Ethiopian/international data.

Course Objectives:

After the completion of this course, students are expected to:

- Understand the basic concepts in regression involving dummy independent and dependent variables;
- Know the theory and practice of elementary time series econometrics;
- Understand the motivation and estimation methods of simultaneous equation modelling;
- Get introductory ideas on linear panel data models; and
- Apply those theoretical concepts in estimation using statistical softwares.

Course Contents for Lecture:

1. **Regression Analysis with Qualitative Information: Binary (or Dummy Variables) (15 hours)**
   - ***1.1.*** Describing Qualitative Information
   - ***1.2.*** Dummy as Independent Variables
   - ***1.3.*** Dummy as Dependent Variable
     - ***1.3.1.*** The Linear Probability Model (LPM)
     - ***1.3.2.*** The Logit and Probit Models
     - ***1.3.3.*** Interpreting the Probit and Logit Model Estimates
2. **Introduction to Basic Regression Analysis with Time Series Data (18 hours)**
   - ***2.1.*** The nature of Time Series Data
   - ***2.2.*** Stationary and non-stationary stochastic Processes
   - ***2.3.*** Trend Stationary and Difference Stationary Stochastic Processes
   - ***2.4.*** Integrated Stochastic Process
   - ***2.5.*** Tests of Stationarity: The Unit Root Test
3. **Introduction to Simultaneous Equation models (8 hours)**
   - ***3.1.*** The Nature of Simultaneous Equation Models
   - ***3.2.*** Simultaneity bias
   - ***3.3.*** Order and rank conditions of identification (without proof)
   - ***3.4.*** Indirect squares and 2SLS estimation of structural equations
4. **Introduction to Panel Data Regression Models (7 hours)**
   - ***4.1.*** Introduction
   - ***4.2.*** Estimation of Panel Data Regression Model: The Fixed Effects Approach

4.3. Estimation of Panel Data Regression Model: The Random Effects Approach

Contents for Computer Lab.:

1. **Regression with Qualitative Information using STATA (6 hours)**
   - Dummy as Independent Variables
   - Dummy as Dependent Variable
     - The Linear Probability Model (LPM)
     - The Logit and Probit Models
     - Interpreting the Probit and Logit Model Estimates
     - Marginal Effects of Probit and Logit Model Estimates
2. **Introductory Time Series Regression using STATA/EViews/PcGive (5 hours)**
   - Tests of Stationarity: the Unit Root Test
   - Estimation of Stationary time series
   - Autocorrelation
   - Estimation of Non-stationary time series
3. **Introductory Panel Data Regression Models (5 hours)**
   - Fixed Effects Model
   - Random Effects Model

REFERENCES:

1. Gujarati, D. N. (2004). *Basic Econometrics*, 4th edition, McGraw-Hill.
2. Maddala, G. S. (1992). *Introduction to Econometrics*, 2nd edition, Macmillan.
3. Wooldridge, J. (2004). *Introductory Econometrics: A Modern Approach* , 2nd ed.
4. Koutsoyiannis, A. (2001). *Theory of Econometrics*, Palgrave: New York.
5. Johnston, J., *Econometric Methods*, 3rd edition.
6. Kmenta, J. *Elements of Econometrics*, 2nd edition.
7. Intrilligator M.D, R.G. Bodkin, and D. Hsiao (1996). *Econometric Models, Techniques and Applications*.