

Course Name:	Econometrics
Course Code:	ECO509
Credit Hours :	03
Total Week :	16-18
Semester :	6th
Total Marks :	100

Course Objectives

The course is designed to enable the students derive relationship between economic variables from the available data. The students should be in a position to apply statistical methods to data via simple mathematical models and to interpret the results by using economic theory. The students are encouraged to learn the use of simple computer programs and econometric packages in handling data and to understand the print outs.

Course Contents

Week 1, 2

Introduction

Definition and scope of Econometrics, Economic theory as the basis for empirical analysis, Mathematical and Econometric models, Application of Statistical techniques to Economic data, Ingredients of Econometric Modeling: Specification, Estimation, Evaluation and Forecasting.

Week 3, 4 & 5

The Classical Linear Regression Model (CLRM)

Assumptions of CLRM

(a) The Simple Two-Variable Model
Variables and parameters, Structure and development of the linear econometric model with two explanatory variables, Rationale for inclusion of the disturbance term.

Problems relating to violation of the assumption of CLRM.

The least squares principle, BLUE properties of the OLS estimators, The estimation procedure, The economic interpretation of the estimated coefficients, Hypothesis testing and the use of Z, t,

F, test statistics, the confidence interval and tests of significance approaches, The ANOVA technique, the explanatory power of the model, Coefficient of determination vs. correlation coefficient: comparing regression and correlation theory, Estimation through the origin.

Week 6, 7 & 8

(b) The Multiple Linear Regression Model (MLRM)

Estimation of model with 3-4 explanatory variables using the OLS procedure, Interpretation of the estimated coefficients, Computation of elastic ties.

The general format of MLR model, Assumptions of model with special reference to independence of the explanatory variable, The degree of freedom and adjusted R², The explanatory power of the model and 'Goodness of Fit', Hypothesis testing in MLR, Overall significance of the regression and the use of F-statistics, Economic theory and econometric modeling.

Week 9, 10 & 11

Relaxing the assumptions of CLRM:

Relaxation of the assumptions and estimation issues, Brief introduction to the nature of problems and alternatives.

(i) Autocorrelation

Autocorrelation and its causes, Time-series data and emergence of the problem with reference to economic theory, The AR (1) process, Consequences of Autocorrelation for OLS estimators, Detection of the problem and remedial measures in brief. Durbin-Watson Test.

(ii) Multicollinearity

Linear relationship between any two explanatory variables, Nature and severity of the problem, Distinction between perfect and partial Multicollinearity, Properties of OLS estimators in the presence of collinearity, Detection of the problem and remedial measures.

(iii) Heteroskedasticity

Meaning of Heteroskedasticity, The nature of the problem with reference to economic theory, Cross-section data and the problem of non-constant variances, Consequences for OLS estimators, Detection of the problem and remedial measures in brief, Introduction to the Generalized Least-Squares model (GLS).

Week 12, 13

Use of SPSS (E-Views & Glitter)

- Development of OLS Model
- Running Regression Analysis
- Testing the significance of overall model

- Showing the relationship among dependent & independent variables
- Removal tests of problems like autocorrelation, Heteroskedasticity & Multicollinearity
- Testing the r-square, adjusted r-square & F-statistics & Probability

Week 14

Dummy variables

Week 15, 16

The Simultaneous Equations Models

Why Simultaneous Equations Models: Deviation from the classical assumptions, the simultaneous equations bias, various types and general format of simultaneous equations models, Exogenous Endogenous variables, The structural and reduced-form models, The identification problem, Formal rules for identification: The Order and Rank conditions, The Indirect Least Squares (ILS), The Instrumental Variables and Two-Stage Least Square(2-SLS).

Text Book

Gujrati, D.J. - Basic Econometrics – 4 Edition (2003) - McGraw Hill Company.

Reference Books

1. Dougherty, Christopher – Introduction to Econometrics – 2 edition (2002)
2. Koutsoyiannis, A.- Theory of Econometrics - 2 Edition (1977) McMillan.
3. Wonnacot & Wonnacot – Econometrics – 2 Edition (1970)-John Wiley, New York.
4. Pindyck & Rubinfeld- Econometric Models & Economic Forecasts- 3 Edition (1992)- McGraw Hill Inc.
5. Maddala, G.S. – Econometrics - (1988) - McGraw Hill Company.