

Subject: Econometric Analysis II

LTP: 3-0-0, CRD: 3

Prerequisite: Econometric Analysis I

Course Contents**Part I: Specification Testing and Model Selection**

- Types of specification errors and consequences - Adoption of wrong functional form
Exclusion of relevant variable(s), Inclusion of irrelevant variable(s), Errors in measurement of variables, incorrect specification of the random disturbance term
- Tests for specification errors
- Model selection criteria

Part II: Dynamic Econometric Models

- Introduction to lagged variable models; Reasons for lags; Types of lagged variable models - Autoregressive models, Distributed lag models, Autoregressive distributed lag models
- Estimation of distributed lag models - Adhoc procedure, Koyck transformation procedure, Almon transformation procedure
- Models with unobservable variables - Adaptive expectation hypothesis, Partial adjustment hypothesis
- Estimation of autoregressive distributed lag models
- Granger causality test

Part III: Time-Series Econometrics

- Key concepts in time-series Econometrics
- Non-stationary time-series and spurious regression
- Testing for stationarity (unit roots)
- Addressing the problem of unit roots
- Method of cointegration - Testing for cointegration, Cointegration and error correction models (ECM)
- AR, MA, ARMA and ARIMA modelling of time-series
- Vector autoregression (VAR) and cointegration
- Forecasting from the Box-Jenkins models
- Measuring volatility – The ARCH and GARCH models

Part IV: Simultaneous-Equations Regression Models

- Nature of simultaneous-equations models; Simultaneity bias and consequences on OLS estimators
- The identification problem; Rules of identification (necessary and sufficient conditions)
- Tests for simultaneity and endogeneity
- Estimation of simultaneous-equations models - Recursive models and the method of OLS, Method of instrumental variables, Method of indirect least squares, Method of two-stage least squares (2SLS)

Part V: Panel Data Regression Models

- Why panel data models; Different types of panel data models - Constant coefficient model, Fixed effects model, Random effects model
- Estimation of panel data models
- Model Selection - Restricted F-test, Breusch-Pagan LM test, Hausman test
- Testing for autocorrelation and unit roots in panel data models
- Estimation of dynamic panel data models

Part VI: Limited Dependent Variable Models

- Limited dependent variable models– Types, issues and implications
- Estimation of limited dependent variable models

Suggested Readings

1. Introduction to Econometrics (4th Edition) by G. S. Maddala and Kajal Lahiri (Wiley)
2. Econometric Analysis (8th Edition) by William H. Green (Prentice Hall)
3. Limited Dependent and Qualitative Variables in Econometrics by G. S. Maddala (Cambridge University Press)
4. Applied Econometric Time Series (4th Edition) by Walter Enders (Wiley)
5. Econometric Analysis of Panel Data by (6th Edition) by Badi H. Baltagi (Springer)

Subject: Econometric Analysis I Lab

CLTP: 0-0-3, CRD: 2

Prerequisite: Econometric Analysis I Lab

Course Contents**Part I: Specification Testing and Model Selection**

- Testing for specification errors and selection of appropriate models

Part II: Dynamic Econometric Models

- Estimation of Autoregressive models, Distributed lag models, Autoregressive distributed lag models, Granger causality test

Part III: Time-Series Econometrics

- Testing for stationarity (unit roots) and addressing the problem of unit roots
- Testing for cointegration; Error correction models
- AR, MA, ARMA and ARIMA modelling of time-series
- Vector autoregression (VAR) and cointegration; Forecasting: Box-Jenkins models
- Measuring volatility – The ARCH and GARCH models

Part IV: Simultaneous-Equations Regression Models

- Testing for simultaneity and endogeneity; Estimation of simultaneous-equations models

Part V: Panel Data Regression Models

- Estimation of panel data models; Selection of appropriate model
- Testing for autocorrelation and unit roots in panel data models; Estimation of dynamic panel data models

Part VI: Limited Dependent Variable Models

- Estimation of limited dependent variable models

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1. Introduction to Econometrics (4th Edition) by G. S. Maddala and K. J. Lahiri (Wiley)
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