Statistics and Econometrics

Module Code: ECO00037M  Credits: 20  Term: 1 - 2
Contact Hours: 54 contact hours
Module Organiser: Professor T. Yamagata

Overview:

The course is divided into two parts: The first part of SE builds on such topics as elementary probability, simple sampling theory and statistical inference (point and interval estimation and hypothesis testing concerning the mean (and sometimes the variance) of a normal population), one-way ANOVA and nonparametric statistical analysis. The second part of SE starts with ordinary least squares procedures for the linear regression model. The basic techniques of regression analysis are studied then we will examine a number of possible problems with the basic regression model and discuss how to cope with these problems. As the course proceeds, non-linear models will be introduced. Specific topics covered include: the OLS estimation of simple and multiple regression models, dummy variables, specification tests, instrumental variable estimation, heteroskedasticity, time series data models, autocorrelation, and maximum likelihood estimation method and binary choice models.

Aims:

SE provides an introduction to a range of statistical and econometric techniques commonly used in quantitative analysis. Special attention is given to the ideas behind the techniques: how and why the statistical procedure works; how to apply them using real world examples and how to interpret the estimation and test results.

Objectives:

On completing the module a student will be able to:

- define and illustrate the concepts of probability, random variables, point and interval estimation, hypotheses testing, correlation, estimation and statistical inference using the regression model; heteroskedasticity; autocorrelation; specification errors; dummy variables; instrumental variables techniques; binary choice models.
- explain why these concepts are important in quantitative analysis,
- apply these quantitative methods to empirical applications such as the estimation of low birth weight, level of education, pollution levels, wage equations, house prices, intergenerational mobility;
- use a statistical computer package Stata to estimate regression models and test the validity of model's assumptions.
Assessment:

There will be a three-hour unseen examination scheduled for the Summer Term. You are advised to read the material concerning assessment on the module web page.

Pre-requisites:

None.

Main References:


Cameron, A.C., and P.K. Trivedi, Microeconometrics Using Stata, Stata Press, First or Revised Edition, 2010