LSE

ADVANCED ECONOMETRICS

This course will present an advanced treatment of econometric principles for cross-sectional, panel and time-series data sets.

While concentrating on linear models, some non-linear cases will also be discussed, notably limited dependent variable models and generalised methods of moments.

The course focuses on modern econometric techniques, addressing both technical derivations and practical applications. Applications in the areas of microeconomics, macroeconomics and finance will be considered.

Main Regression

- Principles of Estimation (Ordinary Least Squares, Generalized Least Squares and Maximum Likelihood Estimation with Micro-Econometric applications)
- Principles of Testing (t- and F-test; Wald, Likelihood Ratio, Lagrange Multiplier Testing Principles).
- Time Series: Basic Time Series Processes; Stationarity and Nonstationarity - Unit roots and Cointegration.

Estimation Methodology

- Endogeneity in linear regression models; Instruments; 2SLS estimator and Generalized IV estimator; Simultaneous equations.
- Motivation, definition and asymptotic properties of GMM estimator; Efficient GMM estimation; Over-identifying restrictions.
- Introduction to Panel Data Models: Fixed effect and random effect models.
- Arellano-Bond estimator in dynamic panel data models.
- Introduction to Quantile estimation.

Students will gain understanding of advanced treatment of econometric principles for cross-sectional, panel and time-series data sets.