7SSPN107 - Quantitative Methods in Political Economy

Department of Political Economy, King's College London

Module information

Academic year:	2026–27
Instructor:	Wouter Leenders (wouter.leenders@kcl.ac.uk)
Office hours:	Tuesday, 09:00–10:00
	Thursday, 09:00–10:00
	Book an office-hours appointment
Office:	Bush House, North East, 8.08
Lecture and seminar times:	MyTimetable
KEATS link:	KEATS

Module description

This module introduces students to the quantitative methods commonly used in political economy. It introduces students to the foundations of statistical analysis, with a particular emphasis on regression analysis and its application to political and economic questions. Alongside the theoretical material, students gain practical experience conducting quantitative analyses in R, including data management, visualisation, estimation and interpretation of regression models.

Module aims

The module is designed to provide students with statistical tools to analyse political and economic phenomena. It covers the principal methods used in research in political economy and discusses their underlying assumptions. While the module aims to ground discussion of quantitative analysis in intuitive understanding, mathematical notation and formulas will be used extensively. In addition, students will learn how to conduct quantitative analyses using the statistical programming language R. Mastering these more technical aspects of the module is important for performing well in the assessments.

Prerequisites

Prior knowledge of statistics or R is helpful but not expected. Familiarity with basic high-school algebra is assumed. This module is not meant for students who have taken any prior intermediate or advanced modules in statistical analysis.

Learning outcomes

By the end of this module, students will be able to

- summarise and visualise quantitative data;
- apply and interpret basic methods of statistical inference;
- estimate and interpret linear regression models;
- explain the main assumptions underlying linear regression and assess common violations of these assumptions;
- apply regression methods to panel data;
- conduct quantitative analyses using R.

Assessment

Students will be assessed on the basis of completing a full problem set (60%) and sitting an exam (40%).

The problem set will be released on 9 November and must be submitted via KEATS by 3 pm on 5 January 2027. In accordance with King's College London's Academic Regulations, late-submission penalties apply to coursework. For this problem set, work submitted late but within 24 hours of the deadline is subject to a deduction of 10 raw marks, subject to the provisions of regulations 4.25–4.30. Work submitted more than 24 hours after the deadline will receive a mark of zero.

The exam will be a two-hour in-person written examination and will take place in January (exact date to be determined by KCL). It will consist of a combination of short questions and practical problems.

Textbooks

The module uses two main textbooks. Stock and Watson's *Introduction to Econometrics* provides the theoretical basis for quantitative analysis, while *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data* covers practical aspects of conducting quantitative analyses in R.

- Stock, J.H., and M.W. Watson. 2020. *Introduction to Econometrics*. 4th Ed. Pearson.
- Wickham, H., M. Çetinkaya-Rundel, and G. Grolemund. 2023. *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data*. 2nd ed. O'Reilly.

Software

All applied work in this module will be conducted using the open-source programming language R and the RStudio interface for working with R. Students should follow the installation instructions on KEATS and install R and RStudio on their personal computer before the first seminar. No prior experience with either R or RStudio is required.

Lectures and seminars

Lectures will cover the theoretical basis for quantitative analysis. Lecture slides will be posted on KEATS at least two working days before each lecture. Students are expected to have completed each week's readings before attending the lecture.

Seminars will focus on practical applications and hands-on coding sessions using R and RStudio. Students are strongly encouraged to bring a laptop with R and RStudio installed so they can code along during the seminar. Seminar slides will be posted on KEATS at least two working days before each seminar.

Teaching schedule

Week 1

29 September: Lecture 1 – Descriptive statistics

- Stock and Watson, sections 2.1–2.3

Week 2

6 October: Lecture 2 – Normal distribution

- Stock and Watson, sections 2.4–2.6

9 October: Seminar 1 – R fundamentals and workflow

- Wickham, Çetinkaya-Rundel and Grolemund, chapters 2, 6 and 7

Week 3

13 October: Lecture 3 – Confidence intervals

- Stock and Watson, sections 3.1 and 3.3

Week 4

20 October: Lecture 4 – Hypothesis testing

- Stock and Watson, sections 3.2 and 3.4

23 October: Seminar 2 – Exploring and visualising data

- Wickham, Çetinkaya-Rundel and Grolemund, chapters 1 and 10

Week 5

27 October: Lecture 5 – Regression I

- Stock and Watson, chapter 4

Week 6 – Reading week

Week 7

10 November: Lecture 6 – Regression II

- Stock and Watson, chapters 5 and 6

13 November: Seminar 3 – Transforming and combining data

- Wickham, Çetinkaya-Rundel and Grolemund, chapters 3 and 19

Week 8

17 November: Lecture 7 – Regression III

- Stock and Watson, chapters 7 and 8

Week 9

26 November: Lecture 8 – Diagnostics

- Stock and Watson, chapter 9

27 November: Seminar 4 – Regression in R

- No additional reading

Week 10

1 December: Lecture 9 – Panel data I

- Stock and Watson, sections 10.1–10.3

Week 11

8 December: Lecture 10 – Panel data II

- Stock and Watson, sections 10.4–10.6

11 December: Seminar 5 – Regression and panel data

- Wickham, Çetinkaya-Rundel and Grolemund, chapter 5