

Economics

School of Social Sciences

2023-2024

ECON 33021

Topics in Macroeconometrics

1. Course details	
Semesters:	S1
Credit rating:	20
Pre-requisites:	Two course out of the following: ECON20071 Advanced Mathematics, ECON20072 Advanced Statistics, ECON20110 Econometrics, ECON20120 Mathematical Economics I, ECON20192 Introduction to Mathematical Economics, ECON20222 Quantitative Methods
Lecturer:	Dr Yizhou Kuang, 3.004, Arthur Lewis Building, Appointment by email: yizhou.kuang@manchester.ac.uk
Tutors:	Dr Yizhou Kuang
Lecture times and rooms:	2 hour session every week; for details see Blackboard
Tutorial times and rooms:	1 hour session every other week; for details see Blackboard
Practical times and rooms:	1 hour session every other week; for details see Blackboard
Reading week:	30 October 2023 – 5 November 2023
Mode of assessment:	Exams (30%+40%) + Group Project (20%) + Computing test (10%) Please see Section 4 of this document for important information about assessment.
Deadline for Submission of Assessed Coursework:	See Section 4 below
Examination Periods:	15 Jan 2024 – 28 Jan 2024
Re-sit Period:	19 August 2024 – 01 September 2024

2. Aims and Objectives

Aims

The course unit aims to:

- Develop students' understanding of various empirical macroeconomic models, estimation techniques, and forecasting methods.
- Provide students with the necessary tools and knowledge to conduct research in macroeconometric topics such as time series analysis, forecasting, Bayesian econometrics, and structural modeling.
- Equip students with critical thinking skills, the ability to read relevant literature, and proficiency in communicating research results effectively.

Objectives

- Analyze and apply various econometric techniques to real-world macroeconomic data, including:
 - Understand the assumptions underlying different macroeconomic models and econometric methods.
 - Evaluate and interpret empirical results from macroeconomic models.
 - Apply econometric techniques to macroeconomic data, including time series analysis, forecasting, Bayesian econometrics, and structural modeling.
 - Identify appropriate statistical models to address specific economic questions.
 - Communicate macroeconometric research findings effectively, including:
 - Develop skills to critically read and review macroeconometric research papers.
 - Identify relevant literature and datasets for conducting macroeconometric research.
 - Perform independent research projects using macroeconomic data and econometric methods.
 - Present and communicate research findings effectively through written reports, oral presentations, and visual displays.
- Demonstrate advanced critical thinking and problem-solving skills in macroeconomics, including:
 - Develop a deep understanding of macroeconomic models and their applications to real-world economic problems.
 - Find appropriate quantitative methods to assess and analyze the impact of macroeconomic policies on economic outcomes.
 - Provide policy recommendations based on research findings.

3. Syllabus and Reading List

Syllabus for 11 weeks (excluding reading week, subject to changes)

Week 1-2: Introduction to Macroeconometrics

- Overview of the course and topics to be covered
- The role of econometric methods in macroeconomics
- Review of statistical and econometric concepts
- Week 3-4: Time Series Analysis and Forecasting
 - Stationary and non-stationary time series models
 - AR, MA, ARMA models and their applications
- Vector autoregressive models, local projections and impulse response functions
- Week 5-6: Time Series Analysis Continued
 - Kalman filter and state-space models
 - Factor models, Forecast evaluation and model selection
- Week 7-8: Bayesian Econometrics
 - Introduction to Bayesian inference
 - Bayesian regression analysis
 - Markov Chain Monte Carlo methods
 - Applications to macroeconomic data and models

Week 9-10: Empirical Applications in Macroeconometrics

- Case studies and applications of macroeconometric techniques
- Empirical research papers and presentations
- Student research projects and presentations

Week 11: Wrap-up and Review

- Review of key concepts and methods covered in the course
- Final exam review and preparation

References

References to what I covered in class should be found in the textbooks given above and the reading list on the blackboard.

Reading List

The reading list below contains 1~2 academic papers per topic – one of these papers (marked by T) will be discussed in the tutorial sessions, and the other (marked by E) forms part of the essential reading list on which the final examination questions will be based. The papers marked E will not be discussed by the lecturer but students are encouraged to collaborate to comprehend those papers. Several other academic articles not listed here will be referred to in the lectures and tutorials – questions based on such articles will not be asked in the examinations beyond the information covered in the lectures.

Textbooks:

- (E) "Time Series Analysis," by James D. Hamilton (1994).
- "Statistical Inference," by George Casella and Roger L. Berger (2002).
- "Time series: theory and methods" by Brockwell, Peter J., and Richard A. Davis (2009)
- "Handbook of economic forecasting" by Elliott, Graham, and Allan Timmermann, 2013.
- "Time Series Analysis: Forecasting and Control," by George E. P. Box, Gwilym M. Jenkins, and Gregory C. Reinsel (2015).
- "Bayesian econometric methods," by Joshua Chan, Gary Koop, Dale J. Poirier, Justin L. Tobias (2020).

Papers:

Week 1-2

- (E) Lewbel, Arthur. "The identification zoo: Meanings of identification in econometrics." *Journal of Economic Literature* 57.4 (2019): 835-903.
- (T) Bayarri, M. J., and J. O. Berger. "The Interplay of Bayesian and Frequentist Analysis." *Statistical Science* 19.1 (2004): 58-80.

Week 3-4

- (E) Stock, James H., and Mark W. Watson. "Vector autoregressions." Journal of Economic perspectives 15.4 (2001): 101-115.
- (T) Jordà, Òscar. "Estimation and inference of impulse responses by local projections." American economic review 95.1 (2005): 161-182.
- Sims, C. A. (1980). "Macroeconomics and reality." Econometrica, 48(1), 1-48.

Week 5-6

- (E) Stock, James H., and Mark W. Watson. "Twenty years of time series econometrics in ten pictures." Journal of Economic Perspectives 31.2 (2017): 59-86.
- (T) Stock, James H., and Mark W. Watson. "Macroeconomic forecasting using diffusion indexes." Journal of Business & Economic Statistics 20.2 (2002): 147-162.
- Stock, James H., and Mark W. Watson. "Forecasting using principal components from a large number of predictors." Journal of the American statistical association 97.460 (2002): 1167-1179.

Week 7-8

- (E) Giannone, Domenico, Michele Lenza, and Giorgio E. Primiceri. "Economic predictions with big data: The illusion of sparsity." Econometrica 89.5 (2021): 2409-2437.
- (T) Brodersen, Kay H., et al. "Inferring causal impact using Bayesian structural time-series models." The Annals of Applied Statistics (2015): 247-274.

Week 9-10

Examinations

- (E) Hansen, Lars Peter, and James J. Heckman. "The Empirical Foundations of Calibration: Journal of Economic Perspectives 10 (1), Winter 1996, pp. 87–104." Real Business Cycles. Routledge, 2013. 254-271.
- Romer, Christina D., and David H. Romer. "The macroeconomic effects of tax changes: estimates based on a new measure of fiscal shocks." American Economic Review 100.3 (2010): 763-801.
- (T) Bernanke, Ben S., Jean Boivin, and Piotr Eliasz. "Measuring the effects of monetary policy: a factor-augmented vector autoregressive (FAVAR) approach." The Quarterly journal of economics 120.1 (2005): 387-422.

No single textbook provides all the necessary material for this course. The course itself will be taught using a combination of textbook chapters, elementary journal articles, and perhaps working papers. A full reading list with the readings for each topic will be made available at the beginning of the course and through the Library Reading List

4. Further information about assessment (Exams+Group Proj+Coursework)

Weighting:	Midterm: 30%, Final: 40%
Date:	Midterm: TBA, Final: TBA
Length:	Midterm: 1 hour, Final: 2 hours
Structure:	Midterm: Closed book in lecture time, Final: Close book in person Question Format: The exam will include some theoretical questions as well as considerations for empirical applications. You're allowed to bring a one- page A4 sheet of handwritten notes to the exam. Calculator Use: Calculators are not permitted.
Past examination papers:	This course unit is being offered for the first time. There are no past- examination papers. However, mock final examination papers will be discussed in the tutorials.
	Please see the University's past examination papers website: http://www.studentnet.manchester.ac.uk/crucial-guide/academic- life/exams//
Group project	
Weighting:	20%
Project title:	To be chosen by students.
Structure:	 Two Components: 1. Homework Assignments (5 marks, 1 each week, but only the last one will be assessed) 2. Group Project (15 marks): Teams will choose a project topic and present their work towards the end of the course.
Grading	Grades of group project will be assessed by the quality of the project, and each student's contribution to the project. Groups should be voluntarily

	formed by no later than the third week, with no more than four people per group. Those who do not join a group by this time will not be forcibly assigned to one.
Presentation date:	Lecture and tutorial time towards the end of the semester
	A list of datasets available for use will be provided, but the project title must first be approved by the instructor. Each group is required to submit a proposal, not exceeding one page, that clearly outlines their research topic, the dataset they intend to use, and their basic empirical strategy.
	Extensions to the deadline can only be granted by the lecturer, subject to the approval of the Programme Director, in exceptional circumstances. The penalty for late submission is very severe.
Computing Test	
Weighting:	10%
Structure:	There will be two computing tests throughout the semester. There will first be some R tasks with some instructions and then online test based on the work done.
Submission date:	First one before reading week and the second one will be the coding part of the group project.

Assessed Coursework

Since assessed coursework must be retained for possible consideration at the Final Examiners' Meeting you should make and keep a copy for yourself. If any possibility of late submission arises through illness or any other good cause, you must inform the relevant lecturer as soon as possible. Penalties, in the form of reduced marks, will be applied for inexcusable lateness in the submission of assessed coursework.

If you submit your course work late there will be a penalty of 10 marks per day (sliding scale) applied for up to 5 days. After which a mark of zero will be awarded for any assessed coursework submitted after the specified date

Assessment criteria

The criteria used by ES in the assessment of examinations and coursework can be found in the following documents.

Degree	Document
Undergraduate	Programme Handbooks (available on the SoSS student intranet http://documents.manchester.ac.uk/display.aspx?DocID=35572)

Plagiarism

Plagiarism is presenting the ideas, work or words of other people without proper, clear and unambiguous acknowledgement. It also includes 'self-plagiarism' (which occurs where, for example, you submit work that you have presented for assessment on a previous occasion), and the submission of material from 'essay banks' (even if the authors of such material appear to be giving you permission to use it in this way). Obviously, the most blatant example of plagiarism would be to copy another student's work. Hence it is essential to make clear in your assignments the distinction between:

- the ideas and work of other people that you may have quite legitimately exploited and developed, and
- the ideas or material that you have personally contributed.

Plagiarism is a serious academic offence and the consequences are severe. Guidelines on plagiarism are included in the documents listed above or can be found, together with general guidelines on the university's examinations process, on the Awards and Examinations Office website http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/exams//

January exam marks

The marks for January examinations, as issued to undergraduate students by Faculty Office and to graduate students by Programme Directors, are **provisional** marks and are provided for information only.

Students are advised that:

- 1. these marks may be raised or lowered by the external examiners;
- 2. once marks have been agreed by the internal examiners and issued to students, they can only be changed via the external examiners;
- 3. if the mark for a particular exam is both 'marginal' and 'critical' to the overall classification of a student, the exam paper/assessed essay will be referred to the appropriate external examiner;
- 4. questions of compensation will be dealt with in June, when the full range of results is available;
- 5. marks are never confirmed until the meeting of the relevant Examinations Board in June;
- 6. the University does not countenance student appeals against the academic judgements of Examiners;

7. the grounds on which a student may appeal are specified on the website http://www.campus.manchester.ac.uk/ssc/appealspolicies/.