

Kobe University  
Graduate School of Economics

**Macroeconomics**  
[3E641][3B781][3E342][3E812][3J313]

**Syllabus**

Third Quarter, 2019

**Instructor**

Clinton Watkins Ph.D

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Office: Building III Room 406

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Hours: By appointment

Web: <http://www.econ.kobe-u.ac.jp/en/people/course/academicstaff/watkins.html>

**Teaching Assistant**

Haojun Gong

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**Lecture Times:** Wednesday, Periods 1 and 2 (08:50 - 10:20 and 10:40 - 12:10).

**Room:** NTT Data IT Room (情報処理教室), 2<sup>nd</sup> Floor, Building III.

**Course Description:** This course introduces advanced macroeconomic modelling techniques and their application to the analysis of business cycle fluctuations. The course has three main parts; we cover: 1) approaches to macroeconomic modelling and analysis; 2) the empirical properties and modelling of macroeconomic variables, and analyse their interrelationships using vector autoregression and other econometric methods; and 3) the standard theoretical macroeconomic models with an emphasis on business cycles, inflation, monetary and fiscal policy. Time permitting, we may examine the interactions between the macroeconomy and the financial system. The course involves a substantial amount of empirical and simulation work in the computer lab using the programming language R, as well as mathematical content. The course is intended to be an introduction to advanced macroeconomics for first year graduate (GMAP) and advanced undergraduate students.

**Course Objectives:** By the end of the course, students should be:

1. familiar with standard frameworks for macroeconomic modelling and analysis;
2. able to understand, model (using R) and interpret the empirical behaviour of important macroeconomic variables;
3. conversant with the mathematical structure and solution of the macroeconomic models covered in the course and familiar with the simulation of macroeconomic models in R;
4. capable of analysing and interpreting the impact of changes in important variables on the macroeconomy, including the impacts of fiscal and monetary policy.

**Credits:** 2.0

**Language:** English

**Evaluation:** Your performance in the course will be evaluated as follows:

Assignments	30%
Final exam	70%

*Assignments:* Assignments will be issued approximately weekly or fortnightly. Doing these assignments will help you to learn the concepts covered in the course and prepare you for the questions asked in the final exam. Please complete all assignments. The assignments will be graded coarsely as “good”, “pass” and “fail”. Empirical and simulation assignments must be submitted via GitHub.

*Final exam:* The final exam will be held on **Wednesday 27 November 2019**. In principle, no supplementary exams will be provided unless there are extenuating circumstances. A calculator may be required. Mobile telephones, tablets or other devices are not permitted.

*It is your responsibility to make sure you attend the exam and hand in the required assignments on time.*

**Prerequisites & Preparation:** Revise undergraduate macroeconomics and mathematical methods for economics. Familiarise with the programming language R, the interface RStudio for R, and the software version control system GitHub that we will use for assignment submission.

**Software & Data:** We will use the following software:

1. the programming language R <https://cran.r-project.org/>;
2. the interface RStudio for R <https://www.rstudio.com/products/RStudio/>;
3. R Markdown for producing documents with code, results and text <https://rmarkdown.rstudio.com/>, check this guide <https://bookdown.org/yihui/rmarkdown/>;
4. a TeX installation is required for R Markdown, use TinyTeX <https://yihui.name/tinytex/> or LaTeX <https://www.latex-project.org/get/>;
5. the software version control system GitHub for submitting assignments <https://github.com/>. If you have not used GitHub before, please make a free account and study how to use it. When you make your account please use an account name that makes it easy for me to identify you.

You are welcome to use your own notebook computer in class if you wish. You will need to be able to access the internet.

Most of the data sets we will use in the course will be provided online via GitHub or BEEF. We will obtain some data from sources such as the Federal Reserve Economic Database (FRED) <https://fred.stlouisfed.org/>.

**References & Required Readings:** The prescribed readings for the course are a combination of book chapters and academic journal articles. There is no single textbook for the entire course. References are listed for each topic in the “Topic & References Guide”. Some of the references will be covered very selectively, and guidance on what to focus on in the readings will be provided in the lectures. Required readings are marked with an asterisk (\*), while optional readings have no asterisk. The optional reading provides more detailed information on the topic and is not required for the examination, but is useful to gain a deeper understanding of the topic for those who are interested. Required references will be provided as handouts during the lectures, and other references will be made available on BEEF. Additional references may be assigned during the course, and the “Topics & References Guide” will be updated accordingly. Please check BEEF for any updates made to the reading list.

We will refer to the following standard graduate textbook:

Romer, D. (2019). *Advanced macroeconomics*. McGraw-Hill Education, 5th edition.

For mathematical techniques, please refer to one of the following:

Chiang, A. C. and Wainwright, K. (2005). *Fundamental methods of mathematical economics*. McGraw-Hill/Irwin, fourth edition.

Simon, C. P. and Blume, L. (1994). *Mathematics for economists*. Norton.

Adda, J. and Cooper, R. W. (2003). *Dynamic economics: quantitative methods and applications*. MIT Press.

For macroeconometric techniques, please refer to one of the following:

Durlauf, S. N. and Blume, L., editors (2010). *Macroeconometrics and time series analysis*. Palgrave Macmillan.

Lutkepohl, H. (2005). *New introduction to multiple time series analysis*. Springer-Verlag, Berlin.

Pfaff, B. (2008). *Analysis of Integrated and Cointegrated Time Series with R*. Springer-Verlag, New York, second edition. Available free within the campus at <http://www.springer.com/gp/book/9780387759661>.

If you are interested in more advanced macroeconomic modelling techniques, the following are useful reference books:

Ljungqvist, L. and Sargent, T. J. (2018). *Recursive Macroeconomic Theory*. MIT Press, fourth edition.

Stachurski, J. (2009). *Economic dynamics: theory and computation*. MIT Press.

The following provide a nontechnical practitioner-oriented coverage of macroeconomics:

McGee, R. T. (2015). *Applied financial macroeconomics and investment strategy: a practitioner's guide to tactical asset allocation*. Palgrave MacMillan, New York, 1st edition.

Leamer, E. E. (2009). *Macroeconomic patterns and stories*. Springer-Verlag.

A nontechnical discussion of modern macroeconomic modelling and Dynamic Stochastic General Equilibrium (DSGE) models:

Athreya, K. B. (2013). *Big ideas in macroeconomics: a nontechnical view*. The MIT Press.

**Useful Academic Journals for Macroeconomics:** Some journals to read for theoretical and/or empirical macroeconomic research include: *Journal of Monetary Economics*, *American Economic Review*, *Journal of Economic Dynamics and Control*, *European Economic Review*, *Journal of Economic Theory*, *Economic Journal*, *Quarterly Journal of Economics*, *Oxford Economic Papers*, *Scandinavian Journal of Economics*.

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## Topic & References Guide

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### 1. Introduction

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- (a) Course overview, objectives, evaluation.
- (b) Overview of R, RStudio, R Markdown, GitHub software.

*References:*

- Syllabus.
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### 2. Using R for Empirical Macro: Basics

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- (a) Setting up and using R, RStudio, R Markdown, GitHub.
- (b) Brief overview of R basics.

*References:*

- R for Beginners.
  - R Markdown: Notes for Editing.
  - LaTeX: Editing for Mathematics.
  - GitHub notes.
  - Student Computer Lab Setup.
  - Venables, W., Smith, D., and R Core Team (2019). An Introduction to R. Available from <https://cran.r-project.org/doc/manuals/R-intro.pdf>.
  - Kleiber, C. and Zeileis, A. (2008). *Applied Econometrics with R*. Springer US, New York, 1st edition, chapter 2. Available free within the campus at <http://www.springer.com/gp/book/9780387773162>.
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### 3. Macroeconomic Data & Cycles

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- (a) Overview of macro data.
- (b) Extracting cyclical components of macro data.
- (c) Stylised facts of major macro aggregates.

*References:*

- \*Stock, J. H. and Watson, M. W. (1999). Business Cycle Fluctuations in US Macroeconomic Time Series. In Taylor, J. B. and Woodford, M., editors, *Handbook of Macroeconomics*, volume 1, chapter 1, pages 3–64. Elsevier Science B.V.
  - Urasawa, S. (2008). Business cycle fluctuations in Japanese macroeconomic time series: 1980-2000. *Journal of the Asia Pacific Economy*, 13(4):451–480.
  - Watkins, C. (2019). Estimating the Japanese Business Cycle Using R. *Gakusyu-No-Tameni*, October:55–66.
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### 4. Context for Macroeconomic Modelling

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- (a) Scientist or engineer? “Model driven” versus “data driven” approaches.
- (b) Comparison of the major macroeconomic schools of thought.
- (c) The current state of macro research, important issues and current practical challenges.

*References:*

- \*Mankiw, N. G. (2006). The Macroeconomist as Scientist and Engineer. *Journal of Economic Perspectives*, 20(4):29–46.

- \*Mankiw, N. G. (1990). A Quick Refresher Course in Macroeconomics. *Journal of Economic Literature*, 28(4):1645–1660.
- Blanchard, O. (2018). On the future of macroeconomic models. *Oxford Review of Economic Policy*, 34(1-2):43–54.
- Romer, P. (2016). The Trouble with Macroeconomics. Working paper.
- Stiglitz, J. E. (2017). Where Modern Macroeconomics Went Wrong. National Bureau of Economic Research Working Paper 23795.

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## 5. Empirical Macroeconomics

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- (a) Estimating Vector Autoregression (VAR) Models.  
 (b) Interpreting Granger Causality, Forecast Error Decompositions and Impulse Responses.

*References:*

- \*Sims, C. A. (1980). Macroeconomics and Reality. *Econometrica*, 48(1):1–48.
- \*Stock, J. H. and Watson, M. W. (2001). Vector Autoregressions. *The Journal of Economic Perspectives*, 15(4):101–115.
- Pfaff (2008), Chapter 2.

- (c) Identification in Empirical Macro.

*References:*

- \*Nakamura, E. and Steinsson, J. (2018). Identification in Macroeconomics. *Journal of Economic Perspectives*, 32(3):59–86

- (d) Supply and Demand Disturbances.

*References:*

- \*Blanchard, O. J. (1989). A Traditional Interpretation of Macroeconomic Fluctuations. *American Economic Review*, 79(5):1146–1164.
- \*Blanchard, O. J. and Quah, D. (1989). The Dynamic Effects of Aggregate Demand and Supply Disturbances. *American Economic Review*, 79(4):655–673.

- (e) Monetary policy shocks.

*References:*

- \*Uhlig, H. (2005). What are the effects of monetary policy on output? Results from an agnostic identification procedure. *Journal of Monetary Economics*, 52(2):381–419

- (f) Technology shocks.

*References:*

- \*Gali, J. (1999). Technology, Employment, and the Business Cycle: Do Technology Shocks Explain Aggregate Fluctuations? *American Economic Review*, 89(1):249–271.

- (g) \*Fiscal shocks.

*References:*

- TBA.
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## 6. Real Business Cycle (RBC) Theory

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- (a) Business cycle research.
- (b) Solving and simulating a simple RBC model.
- (c) Problems with the RBC model.

### References:

- \*Romer (2019), Chapter 5.
- \*McGrattan, E. R. (2008). Real Business Cycles. In Durlauf, S. N. and Blume, L. E., editors, *The New Palgrave Dictionary of Economics*. Palgrave Macmillan, second edition
- Prescott, E. C. (2016). RBC Methodology and the Development of Aggregate Economic Theory. In *Handbook of Macroeconomics*, volume 2, chapter 22, pages 1759–1787. Elsevier B.V., 1 edition.
- TBA.

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## 7. \*New Keynesian Models

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- (a) Price and wage rigidity.
- (b) Imperfect competition and prices.
- (c) Coordination failure.
- (d) Monetary policy in the presence of rigidities.

### References:

- \*Romer (2019), Chapter 6 Parts A & B.
- TBA.

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## 8. \*Interactions Between the Macroeconomy and the Financial System

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- (a) Agency costs, the financial accelerator, mispricing.
- (b) Diamond-Dybvig model.
- (c) Contagion and financial crises.

### References:

- Romer (2019), Chapter 10.
- Diamond, D. W. and Dybvig, P. H. (1983). Bank Runs, Deposit Insurance, and Liquidity. *Journal of Political Economy*, 91(3):401–419
- Diamond, D. W. (2007). Banks and Liquidity Creation: A Simple Exposition of the Diamond-Dybvig Model. *Federal Reserve Bank of Richmond Economic Quarterly*, 93(2):189–200
- Fazzari, S. M., Hubbard, R. G., and Petersen, B. C. (1988). Financing Constraints and Corporate Investment. *Brookings Papers on Economic Activity*, 1:141–206
- Further references TBA.

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### Note:

- References marked with an asterisk (\*) are important required readings. Guidance on what parts of the articles to focus on will be given in the lectures.
- Topics marked with a star (\*) will be covered only if time permits.
- The topics and schedule may be adjusted during the course.
- Additional references may be assigned in the lectures.
- Please check BEEF for updates to the readings list.

## References

- Adda, J. and Cooper, R. W. (2003). *Dynamic economics: quantitative methods and applications*. MIT Press.
- Athreya, K. B. (2013). *Big ideas in macroeconomics: a nontechnical view*. The MIT Press.
- Blanchard, O. (2018). On the future of macroeconomic models. *Oxford Review of Economic Policy*, 34(1-2):43–54.
- Blanchard, O. J. (1989). A Traditional Interpretation of Macroeconomic Fluctuations. *American Economic Review*, 79(5):1146–1164.
- Blanchard, O. J. and Quah, D. (1989). The Dynamic Effects of Aggregate Demand and Supply Disturbances. *American Economic Review*, 79(4):655–673.
- Chiang, A. C. and Wainwright, K. (2005). *Fundamental methods of mathematical economics*. McGraw-Hill/Irwin, fourth edition.
- Diamond, D. W. (2007). Banks and Liquidity Creation: A Simple Exposition of the Diamond-Dybvig Model. *Federal Reserve Bank of Richmond Economic Quarterly*, 93(2):189–200.
- Diamond, D. W. and Dybvig, P. H. (1983). Bank Runs, Deposit Insurance, and Liquidity. *Journal of Political Economy*, 91(3):401–419.
- Durlauf, S. N. and Blume, L., editors (2010). *Macroeconometrics and time series analysis*. Palgrave Macmillan.
- Fazzari, S. M., Hubbard, R. G., and Petersen, B. C. (1988). Financing Constraints and Corporate Investment. *Brookings Papers on Economic Activity*, 1:141–206.
- Gali, J. (1999). Technology, Employment, and the Business Cycle: Do Technology Shocks Explain Aggregate Fluctuations? *American Economic Review*, 89(1):249–271.
- Kleiber, C. and Zeileis, A. (2008). *Applied Econometrics with R*. Springer US, New York, 1st edition.
- Leamer, E. E. (2009). *Macroeconomic patterns and stories*. Springer-Verlag.
- Ljungqvist, L. and Sargent, T. J. (2018). *Recursive Macroeconomic Theory*. MIT Press, fourth edition.
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- Mankiw, N. G. (2006). The Macroeconomist as Scientist and Engineer. *Journal of Economic Perspectives*, 20(4):29–46.
- McGee, R. T. (2015). *Applied financial macroeconomics and investment strategy: a practitioner's guide to tactical asset allocation*. Palgrave MacMillan, New York, 1st edition.
- McGrattan, E. R. (2008). Real Business Cycles. In Durlauf, S. N. and Blume, L. E., editors, *The New Palgrave Dictionary of Economics*. Palgrave Macmillan, second edition.
- Nakamura, E. and Steinsson, J. (2018). Identification in Macroeconomics. *Journal of Economic Perspectives*, 32(3):59–86.
- Pfaff, B. (2008). *Analysis of Integrated and Cointegrated Time Series with R*. Springer-Verlag, New York,

second edition.

- Prescott, E. C. (2016). RBC Methodology and the Development of Aggregate Economic Theory. In *Handbook of Macroeconomics*, volume 2, chapter 22, pages 1759–1787. Elsevier B.V., 1 edition.
- Romer, D. (2019). *Advanced macroeconomics*. McGraw-Hill Education, 5th edition.
- Romer, P. (2016). The Trouble with Macroeconomics. Working paper.
- Simon, C. P. and Blume, L. (1994). *Mathematics for economists*. Norton.
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- Stachurski, J. (2009). *Economic dynamics: theory and computation*. MIT Press.
- Stiglitz, J. E. (2017). Where Modern Macroeconomics Went Wrong. National Bureau of Economic Research Working Paper 23795.
- Stock, J. H. and Watson, M. W. (1999). Business Cycle Fluctuations in US Macroeconomic Time Series. In Taylor, J. B. and Woodford, M., editors, *Handbook of Macroeconomics*, volume 1, chapter 1, pages 3–64. Elsevier Science B.V.
- Stock, J. H. and Watson, M. W. (2001). Vector Autoregressions. *The Journal of Economic Perspectives*, 15(4):101–115.
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- Venables, W., Smith, D., and R Core Team (2019). An Introduction to R. Available from <https://cran.r-project.org/doc/manuals/R-intro.pdf>.
- Watkins, C. (2019). Estimating the Japanese Business Cycle Using R. *Gakusyu-No-Tameni*, October:55–66.