ECON 401

ADVANCED MACROECONOMICS

Syllabus

Autumn 2019

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Office Hours: Monday, 1:30 – 3:20 pm, and by appointment

Welcome

Feel free to address me as Fabio. You can of course address me as Professor Ghironi if you prefer to do so. You can find out a lot about me by visiting my website.

Course Description and Objectives

This course explores modern theories of macroeconomic fluctuations. We will start from the stochastic growth model (also known as real business cycle model), in which fluctuations are the result of random shocks to technology and economic outcomes are efficient. We will use that model as starting point to become familiar with modeling tools and solution techniques that we will use many times throughout the quarter. We will then introduce a number of more realistic features into our models—monopoly power, nominal rigidity, financial frictions, labor market imperfections, heterogeneity across agents, producer entry dynamics, and more. Our goal will be to use the models to think about questions that relate to the conduct of macroeconomic policy— monetary and fiscal policy. We will conclude the course by discussing issues raised by the financial crisis of 2008-09 and its aftermath. The goal will be for you to become familiar with tools and approaches that macroeconomists in academia and at policy institutions use to analyze the issues we will discuss.

Prerequisites

The course will cover a sequence of mathematical models. This will require familiarity with calculus and constrained optimization. The only other prerequisite is Intermediate Macroeconomics (ECON 301), with a minimum grade of 2.0.

Textbook and Other Readings

There is a required textbook for this course: *Modern Macroeconomics* by Sanjay K. Chugh, MIT Press, Cambridge, MA, 2015. However, we will use journal articles or working papers for some of the material we will cover. See the list of topics and readings below, where I refer to the textbook simply as "Textbook" for brevity. The slides I will use will be available from my teaching webpage: http://faculty.washington.edu/ghiro/teaching.html.

Reading Expectation

If I ask you to do some readings in advance of a lecture, I will <u>really</u> expect you to have done those readings. I will take them for granted, and I will base lectures on that assumption.

Important

This course is for students who are <u>seriously interested</u> in <u>advanced</u> macroeconomics, who are willing to do a considerable amount of reading, and who are ready to use plenty of math. Intermediate macroeconomics and calculus are <u>serious</u> prerequisites. If you forgot your calculus, do not remember how to solve constrained optimization problems, and are not happy to refresh your knowledge of these tools within a few days of the course's start, this is <u>not</u> the course for you. This course is <u>not</u> for students without any real interest in advanced macroeconomics. It is <u>not</u> for students who are simply filling their schedules at the last minute with whatever courses happen to be available.

Course Requirements

<u>Midterm exam</u>: There will be an in-class midterm exam on Monday, October 28.

<u>Final exam</u>: There will be a final exam on Thursday, December 12, 2:30 – 4:20 pm, in Mary Gates Hall, Room 238. The final exam will include questions on the pre-midterm material.

> Both exams will be closed-books, closed-notes. You should bring your own bluebooks (or greenbooks) for the exams. If a student is absent from an exam (midterm and/or final), I will follow the guidelines available at http://www.washington.edu/students/reg/examguide.html (see Point 3). Illness of the student will have to be documented.

Midterm and final exams will be graded on a scale 0-100.

<u>Homework assignments</u>: I will assign some homework exercises as the course progresses. Two randomly determined questions or parts per homework assignment (the same questions/parts for each student) will be graded to assign a score between 0 and 100 to each homework. Your overall homework score will be the average of your scores in individual homework assignments.

Your overall score for the course will be determined using a weighted average of your midterm exam score, final exam score, and overall homework score. The <u>weights</u> of the requirements in your overall score will be as follows:

Midterm exam score:	40 percent;
Final exam score:	45 percent;
Total homework score:	15 percent.

Your overall score will determine your grade for the course.

Grader, Grading Procedure, Questions on Grading, and "No-Panic"

There is a Grader for this course. His name is Qiliang Chen. He will grade your homework assignments, midterm exam, and part of the final exam. I will grade the other part of the final exam, and I will determine your grade for the course based on your scores as described above.

I trust Qiliang's competence fully in this process. Therefore, if you have questions about his grading, you should discuss them initially with him, and approach me only if the issue remains unresolved. Qiliang's e-mail address is qlchen "at" uw "dot" edu. You should carbon-copy me on all correspondence with him. If you have questions on the part of the final exam that I will grade, or questions on your grade for the course that do not involve Qiliang's grading, you should contact me directly.

You should not panic if you see low numerical scores for exams or homework assignments. You will receive only numerical scores between 0 and 100 for exams and homework assignments—no 0-4 grades. No reason to panic if you receive a score that is lower than you are used to. If you are concerned about your overall situation in the course, come see me during office hours or an appointment. More often than not, you will find out that you are doing better than you think. Keep in mind that I am happy to reward hard work with good grades at the end of the course. But I do want to see hard work.

Academic Integrity

The University of Washington values the academic integrity of its students and faculty. For Student Academic Responsibility and the consequences of misconduct, see http://depts.washington.edu/grading/pdf/AcademicResponsibility.pdf.

The following is the Economics Department policy on Academic Conduct:

Academic integrity is the cornerstone of the Department's rules for student conduct and evaluation of student learning. Students accused of academic misconduct will be referred directly to the Office of Community Standards and Student Conduct for disciplinary action pursuant to the Student Conduct Code and, if found guilty, will be subject to sanctions. Sanctions range from a disciplinary warning, to academic probation, to immediate dismissal for the Department and the University, depending on the seriousness of the misconduct. Dismissal can be, and has been, applied even for first offenses. Moreover, a grade of zero can be assigned by the instructor for the course.

My own addendum: Any form of cheating will definitely result in a zero score for the relevant assignment or exam.

Religious Accommodations Policy

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at Religious Accommodations Policy (https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/). Accommodations must be requested within the first two weeks of this

course using the [Religious Accommodations Request form (https://registrar.washington.edu/students/religious-accommodations-request/)](https://registrar.washington.edu/students/religious-accommodations-request/).

Where to Leave Documents for Me

If you need to leave a document for me (say, a homework assignment that you forgot to give me in class), please do not leave it under my office door. Leave it in my mailbox in the Economics Department main office (Savery Hall, Room 305). Thank you.

Letters of Recommendation

I unfortunately have to pay much attention to the allocation of my time and effort. Therefore, as a general rule, my availability to write letters of recommendation is very limited. Please do not contact me to ask for letters. I will volunteer that service to you if the circumstances are appropriate.

Advice

This is a course where it will be important to stay on top of the material regularly. Study the material I will indicate without accumulating delay. Work through the models with pencil and paper, making sure that you can reproduce and understand all derivations. Do not try to memorize the material. Focus on understanding.

You should take full advantage of the resources at your disposal: Come to my office hours regularly when you have questions. Do not feel uncomfortable asking the same question more than once—for instance, in class and office hours. I am excited about the material of this course, and I want to do my best to make sure you learn as much as possible from it.

You should also always feel free to ask questions in class. Lively class discussion is always fun.

However, you should not e-mail me questions that require answers that are longer than one line. E-mail is an extremely inefficient way to handle such questions. It is much better to meet in person and discuss things in office hours or appointments.

If you want to schedule an appointment, you should give me sufficient advance notice and not send me e-mails asking if you can see me on the same day or the next day. It will usually be impossible for me to accommodate short notices. Moreover, short-notice requests are rude, unless motivated by exceptional circumstances.

You will be asked and expected to work hard for this course. But you can expect that I will be doing the same, and you will find that I am happy to go the extra mile to make sure you learn if you come to office hours with your questions or schedule an appointment.

An Additional Resource (or Some Shameless Self-Promotion)

I took a (for me) giant leap into modernity in June of 2015 and signed up for a Twitter account ([@FabioGhironi](https://twitter.com/FabioGhironi)). Contrary to my initial skepticism, I have been finding it a very useful source of information. Several of my tweets consist of retweeting columns and op-ed articles I find especially interesting on current economic events, occasionally adding my own musings. The themes in the articles can often be connected to things we discuss in this course. If you are on Twitter and read the articles I tweet about, they may give you ideas for fun discussions in class or office hours.

Topics and Readings

Following is the list of topics I plan to cover with associated readings (how deep we go in the list will depend on the evolution of the course). We will not go into the details of several of the papers listed below, but the papers provide the foundation of things we will discuss. As the course progresses, I will indicate which readings are indeed required. (All articles and working papers listed below are freely available online if you are logged into the UW network.) Again, I will post the course slides in my teaching webpage http://faculty.washington.edu/ghiro/teaching.html so you can use them as study material. The slides will be designed to make the material in the readings as accessible to you as possible. Once you have done the readings I ask you to do, the slides will be your most important source to review the course material.

Topic 1: The Stochastic Growth Model
Textbook, Chapter 14.
Campbell, J. (1994): "Inspecting the Mechanism: An Analytical Approach to the Stochastic
    Growth Model," *Journal of Monetary Economics* 33: 463-506.
Kydland, F. E., and E. C. Prescott (1982): "Time to Build and Aggregate Fluctuations,"
    Econometrica 50: 1345-1370.

Topic 2: New Keynesian Macroeconomics
Textbook, Chapters 13, 22, and 23.
Blanchard, O. J., and N. Kiyotaki (1987): "Monopolistic Competition and the Effects of Aggregate
    Demand," *American Economic Review* 77: 647-666.
Calvo, G. A. (1983): "Staggered Prices in a Utility Maximizing Framework," *Journal of Monetary
    Economics* 12: 383-398.
Dixit, A. K., and J. E. Stiglitz (1977): "Monopolistic Competition and Optimum Product Diversity,"
    American Economic Review 67: 297-308.
Rotemberg, J. J. (1982): "Monopolistic Price Adjustment and Aggregate Output," *Review of
    Economic Studies* 49: 517-531.
Yun, T. (1996): "Nominal Price Rigidity, Money Supply Endogeneity, and Business Cycles,"
    Journal of Monetary Economics 37: 345-370.

Topic 3: Macroeconomic Policy
Textbook, Chapters 15 and 16.
Clarida, R., J. Galí, and M. Gertler (1999): "The Science of Monetary Policy: A New Keynesian
    Perspective," *Journal of Economic Literature* 37: 1661-1707.
Romer, D. (2000): "Keynesian Macroeconomics without the LM Curve," *Journal of Economic
    Perspectives* 14: 149-169.
Taylor, J. B. (1993): "Discretion vs. Policy Rules in Practice," *Carnegie-Rochester Conference
    Series on Public Policy* 39: 195-214.
Woodford, M. (2003): *Interest and Prices: Foundations of a Theory of Monetary Policy*, Princeton
    University Press: Princeton, NJ (selected parts of chapters 1-4).

Topic 4: Optimal Macroeconomic Policy
Textbook, Chapters 17-20.
Barro, R. J., and D. B. Gordon (1983a): "A Positive Theory of Monetary Policy in a Natural-Rate
    Model," *Journal of Political Economy* 91: 589-610.
Barro, R. J., and D. B. Gordon (1983b): "Rules, Discretion, and Reputation in a Model of
    Monetary Policy," *Journal of Monetary Economics* 12: 101-121.
Kydland, F. E., and E. C. Prescott (1977): "Rules Rather Than Discretion: The Inconsistency of
    Optimal Plans," *Journal of Political Economy* 85: 473-491.

Persson, T., and G. Tabellini (1993): "Designing Institutions for Monetary Stability," *Carnegie-Rochester Conference Series on Public Policy* 39.

Rogoff, K. S. (1985): "The Optimal Degree of Commitment to an Intermediate Monetary Target," *Quarterly Journal of Economics* 100: 1169-1189.

Walsh, C. E. (1995): "Optimal Contracts for Central Bankers," *American Economic Review* 85: 150-167.

Topic 5: Unemployment

Textbook, Chapters 27, 28, and 29.

Andolfatto, D. (1996): "Business Cycles and Labor-Market Search," *American Economic Review* 86: 112-132.

Diamond, P. A. (1982a): "Wage Determination and Efficiency in Search Equilibrium," *Review of Economic Studies* 49: 217-227.

Diamond, P. A. (1982b): "Aggregate Demand Management in Search Equilibrium," *Journal of Political Economy* 90: 881-894.

Merz, M. (1995): "Search in the Labor Market and the Real Business Cycle," *Journal of Monetary Economics* 36: 269-300.

Mortensen, D. T., and C. A. Pissarides (1994): "Job Creation and Job Destruction in the Theory of Unemployment," *Review of Economic Studies* 61: 397-415.

Topic 6: Financial Frictions, House Prices, and Unconventional Monetary Policy

Textbook, Chapter 21.

Bernanke, B. B., M. Gertler, and S. Gilchrist (1999): "The Financial Accelerator in a Quantitative Business Cycle Framework," in Taylor, J. B., and M. Woodford (eds.), *Handbook of Macroeconomics*, Elsevier: Amsterdam, 1341-1393.

Gertler, M., and P. Karadi (2011): "A Model of Unconventional Monetary Policy," *Journal of Monetary Economics* 58: 17-34.

Iacoviello, M. (2005): "House Prices, Borrowing Constraints, and Monetary Policy in the Business Cycle," *American Economic Review* 95: 739-764.

Topic 7: Heterogeneous Agents

Bilbiie, F. O. (forthcoming): "The New Keynesian Cross," *Journal of Monetary Economics*.

Bilbiie, F. O. (2019): "Monetary Policy and Heterogeneity: An Analytical Framework," *mimeo*, University of Lausanne.

Debortoli, D., and J. Galí (2018): "Monetary Policy with Heterogeneous Agents: Insights from TANK Models," Working Paper, CREI-Universitat Pompeu Fabra.

Kaplan, G., B. Moll, and G. Violante (2018): "Monetary Policy According to HANK," *American Economic Review* 108: 697-743.

Ravn, M. O., and V. Sterk (2016): "Macroeconomic Fluctuations with HANK & SAM: An Analytical Approach," CEPR DP 11696.

Topic 8: Endogenous Producer Entry and Product Variety

Bilbiie, F. O., F. Ghironi, and M. J. Melitz (2012): "Endogenous Entry, Product Variety and Business Cycles," *Journal of Political Economy* 120: 304-345.

Ghironi, F. (2018): "Macro Needs Micro," *Oxford Review of Economic Policy* 34: 195-218.

Topic 9: Secular Stagnation and Stagnation Traps

Eggertsson, G., N. Mehrotra, and J. Robbins (2019): "A Model of Secular Stagnation: Theory and Quantitative Evaluation," *American Economic Journal: Macroeconomics* 11: 1-48.

Benigno, G., and L. Fornaro (2018) "Stagnation Traps," *Review of Economic Studies* 85: 1425-1470.