ECON 401

ADVANCED MACROECONOMICS

Syllabus

Spring 2020

Lectures:
Zoom Meetings on Monday and Wednesday
10:30 am – 12:20 pm U.S. PST
Recorded Meetings will be available on Canvas

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Office Hours: Zoom Meetings on Monday, 1:30 – 3:20 pm U.S. PST, 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. My objective will be to take you as close as possible to understanding how many macroeconomists at academic and policy institutions think about business cycles and policy questions, including the crisis created by COVID-19. 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 concepts, tools, and techniques that we will use many times throughout the quarter. We will then introduce a number of more realistic features into our framework—monopoly power, nominal rigidity, financial market frictions, labor market imperfections, producer entry dynamics, heterogeneity across agents, and more. We will conclude the course with an example of how the tools we study can be used to analyze the ongoing COVID-19 crisis.

Prerequisites

The course will cover a sequence of mathematical models. This will require familiarity with multivariate calculus and constrained optimization. Things like using the chain rule, setting up a Lagrangian, taking logarithms of functions of multiple variables and differentiating must be familiar to you. If you have forgotten how to do these things, you should review these concepts as soon as

possible. The only other prerequisite is Intermediate Macroeconomics (ECON 301), with a minimum grade of 2.0.

Textbook and Other Readings

The only required material is a set of slides/notes that I will post on Canvas and in my teaching webpage at http://faculty.washington.edu/ghiro/teaching.htmland that I will update as the course progresses. A large portion of the slides are based on a textbook that would be required material if we held this course under normal conditions: *Modern Macroeconomics* by Sanjay K. Chugh, MIT Press, Cambridge, MA, 2015. Given the circumstances of this quarter, I am no longer requiring that you read material in it. If you become especially interested in the material we will discuss, you may want to buy it anyway for additional background reading.

Pencil-and-Paper Reading Expectation

If I ask you read some material in advance of a lecture, please put your best effort into doing it. In this course, reading means going through the slides/notes with a pencil and an ample supply of paper next to you, so you can re-do all the derivations as you read (and fill the blanks when steps you should know how to do are skipped in the slides/notes). This is very important: Do not try to memorize any of the material. You should focus on understanding it, not trying to memorize equations and results. If you try doing that, you will be quickly overwhelmed.

Important

This course is for students who are seriously interested in advanced macroeconomics, who are willing to do the maximum amount of work that you can do under the circumstances of this quarter. To reiterate, intermediate macroeconomics and calculus are serious prerequisites. If you forgot your calculus and are not happy to refresh your knowledge of these tools within a few days of the course's start, this is not the course for you.

Course Requirements

I will be assigning homework exercises at a frequency that will depend on how the course progresses. Each homework exercise will be graded on a scale 0-100 (for longer homework exercises, randomly selected parts—the same parts for each student—will be graded). Your lowest homework score will be dropped, and your overall homework score will be computed as the average of your remaining homework scores.

There will be take home midterm and final exams. The midterm exam will be assigned on April 29. The final exam will be assigned during Final Examination Week, on a day to be determined. You may consult all course materials and standard Internet resources when taking these exams, but your work must be original and you may not solicit or obtain assistance from or provide assistance to other people for any specific content on the exam. Activities considered cheating include copying or closely paraphrasing content from websites and discussing exam questions with other students. The exams will be graded on a scale 0-100. All exams will be checked for originality and copied content, and anyone found cheating will be assigned a zero score for the exam.

Your overall score for the course will be determined using a weighted average of your overall homework score and the exam scores, weighted as follows:

Overall homework score: 30 percent.

Midterm exam score: 20 percent.
Final exam score: 50 percent.

Your overall score for the course will determine the grade between 0 and 4 that I will assign at the end.

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

There is a Grader for this course. Her name is Yurim Lee. She will grade your homework assignments, the 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 Yurim's competence fully in this process. Therefore, if you have questions about her grading, you should discuss them initially with her, and approach me only if the issue remains unresolved. Yurim's e-mail address is yrlee88 "at" uw "dot" edu. You should carbon-copy me on all correspondence with her. 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 Yurim's grading, you should contact me directly.

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.

Religious Accommodations Policy

Please see the UW's 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/).

Letters of Recommendation

You should let me know by the end of the quarter if you think that you may be interested in a letter of recommendation from me next year. Exogenous constraints imply that my availability for this task will have to be very limited, and I will not be able to accommodate letter requests that I receive during or after the summer from students with whom there was no prior discussion of this topic.

More Advice

Please do your best to stay on top of the material regularly. Once again: Use 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: Join the Zoom Office Hours meeting to ask your 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 will do my best to make sure you learn as much as possible from it.

You should also always feel free to ask questions during our Zoom Lectures. Lively class discussion is always fun.

However, you should not e-mail me questions that require answers that are longer than one or two lines. E-mail is an extremely inefficient way to handle such questions. It is much better to arrange a Zoom conversation to discuss your questions. I will do my best to give you maximum flexibility for Zoom appointment scheduling, but please do not expect that I will be able to accommodate same-day or next-day appointment requests. Reasonable advance notice will be important.

The circumstances of this quarter create new and unique challenges. My priority will be to give you a course that can be a valuable learning experience under these circumstances. I will give you all the flexibility I can give, but I will expect that we all put our best effort into the course, subject to the constraints created by situations that may evolve in unpredictable ways. Expect that there will be glitches. Let us all be prepared to handle them with grace.

#EconTwitter

There is an active community of economists on Twitter (#EconTwitter). I am one of them, mostly retweeting material I find interesting and occasionally contributing my own thoughts. Much material tweeted by me or other members of the #EconTwitter crowd is related to things we talk about in this course and can be a source of ideas for questions and discussions. If you are interested in this, my Twitter handle is @FabioGhironi.

Topics and Readings

Following is the list of topics I plan to cover. Whether we will cover all the topics will depend on the pace we manage to keep. For each topic, I list some seminal literature contributions that were the foundation of much work in that research area, the relevant chapter of Sanjay Chugh's textbook (if it covers that topic), or recent papers I will talk about. I list these sources for you to have some background information. They are not required readings. Once again, the slides/notes that will be posted on Canvas and at http://faculty.washington.edu/ghiro/teaching.html will be your only required study material. If you become especially interested in any topic, all the articles and working papers listed below are freely available online if you are logged into the UW network. But you should expect that they will be harder to work through than the slides/notes.

Important: Macroeconomics is about a lot more than the list of topics below. There are large parts of the field that we simply do not have time to talk about. For instance, this course focuses on fluctuations and does not cover growth, except for a simple mechanism early in the course. We will not talk about models with overlapping generations of agents. In our meetings and in the slides/notes, we will not go deep into issues of fiscal policy and sustainability of government debt.

We will focus on closed-economy environments, abstracting from the roles of trade, the exchange rate, and net foreign assets. We will not cover many other very interesting topics. But what we will cover will give you a taste of how many macroeconomists think about the topics we will study, doing it at a level that is accessible for you.

Topic 1: The Stochastic Growth Model

Campbell, J. (1994): "Inspecting the Mechanism: An Analytical Approach to the Stochastic Growth Model," *Journal of Monetary Economics* 33: 463-506.

Chugh, S. K. (2015): *Modern Macroeconomics*, MIT Press, Cambridge, MA, Chapter 14.

Kydland, F. E., and E. C. Prescott (1982): "Time to Build and Aggregate Fluctuations," *Econometrica* 50: 1345-1370.

Topic 2: New Keynesian Macroeconomics

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.

Chugh, S. K. (2015): *Modern Macroeconomics*, MIT Press, Cambridge, MA, Chapters 13, 22, and 23.

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

Chugh, S. K. (2015): *Modern Macroeconomics*, MIT Press, Cambridge, MA, 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

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.

Chugh, S. K. (2015): *Modern Macroeconomics*, MIT Press, Cambridge, MA, Chapters 17-20.

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

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

Chugh, S. K. (2015): *Modern Macroeconomics*, MIT Press, Cambridge, MA, Chapters 27-29.

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

Chugh, S. K. (2015): *Modern Macroeconomics*, MIT Press, Cambridge, MA, 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: 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 8: 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 9: The COVID-19 Crisis

Eichenbaum, M. S., S. Rebelo, and M. Trabandt (2020): "The Macroeconomics of Epidemics," NBER WP 26882.

Fornaro, Luca, and Martin Wolf (2020): "COVID-19 Coronavirus and Macroeconomic Policy," CEPR DP 14529.

Gourinchas, Pierre-Olivier (2020): "Flattening the Pandemic and Recession Curves," in Baldwin, Richard, and Beatrice Weder di Mauro (eds.), *Mitigating the COVID Economic Crisis: Act Fast and Do Whatever It Takes*, VovEU.org e-book, CEPR Press, pp 31-40.