University of Notre Dame du Lac
Monetary Theory and Policy
ECON 40364-01
Fall 2020

Location:
Bond Hall 220
Also on Zoom: meeting ID 988 3436 2736, passcode 1712720250

Times:
Mondays and Wednesdays, 2:20-3:35 pm

Instructor:
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(574) 631-6309
Personal website
Course website on Sakai
Office hours: 3:00-5:00 pm Tuesdays on Zoom: meeting ID 617 438 6082 and password is 202007; otherwise by appointment (3036 JNH or in-person option)

Teaching Assistants:
Emanuel Lazzaro (elazzaro@nd.edu)
Kaitlyn Solarz (ksolarz@nd.edu)

Lazzaro office hours: Tuesdays, 7-8:30, in person, DeBartolo 136
Solarz office hours: Sundays, 7-8:30 via Zoom: meeting ID 916 3850 4449 and password is jKhZ4f

Textbooks:
Mishkin: *The Economics of Money, Banking, and Financial Markets*. 11th edition
Garin, Lester, and Sims: *Intermediate Macroeconomics*. Available online

Course Overview:
What is money? What determines the prices of the goods and services we buy? Why have we experienced persistent inflation since the early 20th century? What is a central bank? What are the important features of central bank function and design? What do we mean by liquidity, and why is it important? What is an interest rate, and why are there so many interest rates? How do central banks affect interest rates, and how do interest rates affect the economy? What is a yield curve? What should central banks do during a recession? What happens during a financial crisis? How should central banks react to financial crises? What has been going on with monetary policy in response to the COVID-19 crisis? What are the implications of the massive increases in central bank balance sheets in the last 10-12 years?

This course is focused on monetary theory and how monetary policy interacts with the aggregate economy. It aims to provide students with some tentative answers to the questions listed in the paragraph above, as well with a set of tools to continually evaluate these and similar questions in the future. The course builds off of the basic tools of micro and macroeconomics. It is assumed that students have taken both intermediate micro and macro and have a working grasp of calculus.

The course will be divided into roughly three parts. In the first part of the course, we will study the origins and role of money; the meaning of liquidity; the factors determining money demand and supply, the aggregate price level, and nominal interest rates; and an aggregate demand-supply model of the economy which one can use to study what we will refer to as "conventional" monetary policy. By "conventional" monetary policy we refer to the adjustment of short term nominal interest rates to hit targets for inflation and some measure of economic activity. Much of the first part of the course ought to be at least somewhat familiar. The first part of the course will conclude with brief discussions about central bank mandates and design, the time inconsistency problem, and the recent interest in so-called "modern monetary theory."

The second and third parts of the course build on the first. The second part of the course focuses on asset pricing, the risk and term structure of interest rates, the stock market, financial structure, and banking. For much of this part of the course we will not talk explicitly about money per se but these are topics of great interest to monetary policymakers. The third part of the course studies financial crises and monetary policy responses thereto. We will compare and contrast the Great Depression and the Great Recession. We will use tools learned in the first and second parts of the course to study and analyze "unconventional" monetary policy, including tools such as large scale asset purchases, quantitative easing, exotic lending facilities, forward guidance, and negative interest rates. We will conclude with a discussion into the monetary policy responses to the COVID-19 crisis.

Textbook and Readings:
There are two required texts for this course. The first is by Frederic Mishkin, *The Economics of Money, Banking, and Financial Markets*, 11th edition. This book is often assigned in Money, Credit, and Banking courses but also works well for a course in monetary theory and policy. The author of the book was a Governor of the Federal Reserve Board in the lead-up to, and early stages of, the financial crisis of 2007-2009, so he brings a solid perspective. We will follow some parts of the book more closely than others, will not cover all chapters, and will not progress through the book in a linear fashion.

Some of the material presented in class will be at a higher level than that contained in Mishkin's book. To assist with this material, I am also assigning several chapters from my intermediate macro text, which you can freely access online. The most recent edition of the text has an entire part devoted to money, banking, and finance. These are the chapters from which we will draw in this particular class. In the course outline, I abbreviate the title of the book as "GLS."

I understand that textbooks are exorbitantly expensive and feel somewhat bad for assigning one for which you must pay. But Mishkin's book is actually pretty good and provides some good background on much of the material we will cover in the course. I think you will benefit from reading the assigned chapters before class discussions and then going back through the assigned chapters after lectures. You will not be responsible for anything in either Mishkin's or my texts which is not covered in class. If you want to try to get by without Mishkin's book I will not try to

stop you, though I think you will benefit from it. If you're looking for a way to save some money, I would suggest you try sharing a book with another member of the class. You are also welcome to purchase older (or newer) editions of the book, but I do not have access to these and cannot guarantee that the material in older (or newer) editions is the same as in the 11th edition.

There will be other outside readings assigned throughout the semester. These include academic journal articles, excerpts from books, blog posts, or shorter articles in popular periodicals. Several of these readings are already listed in the course outline. Some additional readings may (or may not) be added as the semester progresses. Links to these readings will be provided on the course webpage. As the outside readings are all related to the course lectures, for exams you will be responsible for the material contained in assigned outside readings, regardless of whether we explicitly discuss these readings in class. Note that this policy differs from that relating to the textbooks.

Course Website:
I will maintain an active course website online through Sakai. On the website you can find the syllabus, lecture slides, problem sets and solutions, exam solutions, and outside assigned readings. I will also use the Sakai site as a gradebook so that you may follow your progress over the course of the semester. Given the unusual circumstances surrounding this academic year, all assignments, quizzes, and exams will be administered virtually via Sakai. Problem sets may be accessed and completed via the "Assignments" tab while quizzes and exams are accessible through the "Tests and Quizzes" tab. I will also be posting recordings of the lectures. These can be found under the "Panopto" tab on Sakai.

Evaluation:
Evaluation for the course will be based on graded problem sets, quizzes, and exams. There will be five assigned problem sets due roughly every two to three weeks throughout the semester. Problem sets can be worked on in groups but must be turned in individually. Problem set questions may include questions that ask you to download data, produce graphs, or conduct computations in Microsoft Excel. I assume that by now you have some working familiarity with Excel. If not, the internet is a good resource. Problem sets will be turned in online via Sakai this semester. You may write by hand or type your solutions.

New to this semester, the course will feature weekly online quizzes. These will be short and will feature only multiple choice and/or true-false questions. Quizzes will go live on Sakai on Thursdays at 5 pm. You will have a 24-hour window in which to complete each quiz (i.e. until Friday at 5 pm). As the quizzes are short, you will only have ten-minutes in which to complete the quiz once you begin. The quizzes will focus on topics covered in the Monday and Wednesday lectures of each week, and will also focus on supplemental readings that may or may not have been explicitly discussed in class that week. There will be 13 quizzes over the course of the semester. The only week in which we will not have a quiz is the week of the midterm (so no quiz on Friday, October 2, since the midterm exam will be that week). The other caveat here is that the final quiz of the semester will be administered one day early, on Thursday, November 12 (going live at 5 pm on the Wednesday before, due 5 pm that Thursday). This is because Friday, November 13 is a reading day and no assignments are permitted on that day.

There will be one midterm exam and a comprehensive final exam. The midterm exam will be administered on Monday, September 28. It will cover all material presented in class up through class on September 23. This exam will be administered online. The exam will go live at midnight on

Sunday, September 27 and be available until midnight on Monday, September 28. You will have 1 hour and 45 minutes to complete the exam once you begin. The exam is designed for 1 hour and 15 minutes (the normal class length). I am giving the extra half-hour to provide you time to upload your answers to free-response questions and to account for any additional technical glitches that may arise. There will be no class on this day. Note that if you take 15 minutes of the pre-class passing period and 15 minutes of the after-class passing period, combined with the actual class slot you have 1 hour and 45 minutes. You do not have to take the exam during this slot – you may take it at any point in the 24-hour window that day. But you do have time to complete the exam during the normal class slot if your schedule that day is full.

The final exam will take place on the date assigned by the Registrar, which is Thursday November 19 (incidentally, my birthday, I won't tell you how old I am). The official slot is 4:15-6:15. I will again administer the exam online. The setup will be similar to the mideterm – you will have a 24-hour window in which to complete the exam. I will have it go live at midnight on the 18th and be available until midnight on the 19th. Once you open the exam, you will have 2.5 hours in which to complete it. The exam will be designed for 2 hours, so again I am giving an additional half-hour to upload responses to free-response questions and to account for potential technical glitches.

The quizzes, the midterm, and the final exam will be open-book. That is, you can use whatever materials you have available to you when completing these assignments. You should not view the open-book nature of these assignments as a crutch – you don't have that much time, so you should not expect to be able to answer all questions without previously studying. *You may not consult with anyone else – be they members of the class or otherwise – when completing any quiz or exam. Failure to comply with this regulation will result in a score of 0 on the assignment and will be reported to the University as an Honor Code violation.*

The cumulative grade on the problem sets will count for 25 percent of the course grade (5 percent each). No problem set scores will be dropped from the calculation of the final course grade. In total, quizzes will count 24 percent (there will be 13 quizzes – one for each non-exam week – worth 2 percent of the final grade each). Your lowest quiz score will be dropped in calculating the final grade. The midterm will count 23 percent of the course grade and the final exam will count for the other 28 percent. I will be using a conventional, high school level 0-100 grading scale. The mapping between points and letter grades can be found below, where g denotes numeric points:

A	$g \geq 94$
A-	$90 \leq g < 94$
B+	$87 \leq g < 90$
B	$83 \leq g < 87$
B-	$80 \leq g < 83$
C+	$77 \leq g < 80$
C	$73 \leq g < 77$
C-	$70 \leq g < 73$
D	$65 \leq g < 70$
F	$g < 65$

I don't particularly care for such a scale, but I think it is useful for students to know where they stand. I may curve scores on problem sets or exams. If I do so, I will give students the formula converting raw scores into curved scores (the curve may be linear or non-linear). I also may not

curve scores, depending on my assessment of the absolute difficulty of the exam or assignment as well as the overall class performance. In the interest of being completely transparent, I anticipate that the average grade for the semester will be around a 3.3 (roughly a B+), though this is only a rough guide and I make no promises.

There is no class participation grade or formal attendance policy. You are adults and are responsible for managing your own time. While there is no explicit attendance policy, I am loosely aware of attendance patterns. Keep in mind that as instructor I will be more willing to work with a student and/or show leniency when I sense that the student is putting forth solid effort. You are welcome to alert me if you have to miss class for any reason, though this is not necessary. Some of you are seniors looking for jobs, some of you may be athletes, and others may be involved in university clubs or activities. Many of you may well have commitments that force you to miss class from time to time, and this is understood. But it should also be understood that you are responsible for any material presented in class when you are absent for any reason. Although I'm happy to work with you outside of class, it is not my responsibility to repeat lectures you had (or chose) to miss.

If you have to miss an exam for any reason, you must notify me a week in advance. If the conflict is legitimate (e.g. a university-sponsored event), we can jointly set alternative arrangements. Failure to alter me of any potential conflict at least a week in advance may result in no alternative arrangements being available. If you have a conflict and are unable to take the midterm at an alternative time within a one or two day window of the rest of the class, you may be offered the choice to have the weight of the midterm shifted to the final exam.

Office Hours and Out of Class Meeting Times:
I will hold office hours virtually on Zoom on Tuesdays from 3:00-5:00 pm. My meeting ID is 617 438 6082; the password is 202007. These are open office hours – anyone in the class can jump in. Otherwise office hours will be held by appointment. For by appointment office hours, we can do them either in-person in my office or via Zoom. If in-person, there can only be one person at a time.

I very much enjoy getting to know students. With all the COVID restrictions in place, this is going to make it difficult to get to know you (or to learn your names, since we will all be in masks). I'm therefore going to offer to meet with each student individually for 10-15 minutes in the first couple of weeks in the semester. These meetings will be via Zoom with the same coordinates as laid out above. These meetings are intended to be very informal – I just want to get to know you, learn about your interests, etc. I will not require you to sign up for a meeting, though I encourage it. I will be sharing a Google Sheet for signups right at the beginning of the semester.

The course will have two teaching assistants: Emanuel Lazzaro and Kaitlyn Solarz. They have both taken this course and exceled. Kaitlyn will hold weekly office hours from 7-8:30 pm on Sundays. These will be virtual on Zoom. Emanuel will hold in-person office hours on Tuesday from 7-8:30 pm (location TBA). Emanuel and Kaitlyn will hold additional office hours around exam times.

The best way to contact me is via email. I will do my best to respond promptly but keep in mind that I sleep more or less normal hours, unlike many of you. Middle of the night emails will not be responded to until the next day. To ensure a prompt response, please put "Monetary Theory" or something similar in the subject line of any email.

COVID-19 Restrictions and Protocols:
The ongoing COVID-19 pandemic requires that we follow and obey all University protocols. These include wearing a mask while in class and sitting in an assigned seat for the purposes of contact-tracing. Please follow all posted protocols and encourage your classmates to do the same.

Because of the pandemic, I am holding open office hours online via Zoom and all problem sets, quizzes, and exams will be administered online via Sakai. For students unable to attend class, I will be livestreaming and recording lectures via Zoom. Recorded lectures will be made available on Sakai under the "Panopto" tab. To be honest, I am a little bit unsure about recording classes. I worry about privacy issues and disincentive effects regarding class attendance. Depending on how things go, I may decide to stop posting class recordings.

While there is no formal attendance policy, I am informally aware of attendance patterns. I would discourage you from relying on recorded lectures as a substitute for attending class in-person, and I will be less willing to be lenient when it comes time to assign grades if you have not been attending classes in-person (without a legitimate medical or other reason for missing class).

Prayer before Class:
I will open each class with a free-form prayer asking God to guide us as we seek to better understand the world around us. My Catholic faith is important to me, and at a Catholic university I think it is crucial that we ask for God's assistance as we engage in important endeavors. You are welcome to participate in the prayer however you best see fit. If you are not the praying kind, that's fine and I want you to feel welcome, but please be respectful.

If you would like to add a prayer intention, please email me your intention before class and I will include it in my opening prayer. Please limit yourself to non-frivolous intentions. While former head football coach Gerry Faust famously used to ask his players to recite a Hail Mary before important plays, and while I (and I'm sure some of you) are guilty of this practice as well, I will not entertain intentions for athletic victories in the opening class prayer.

Course Outline (tentative and subject to revision):

1) **Traditional Monetary Theory and Conventional Monetary Policy**
   a) What is money (Friedman Ch. 1, first part of Ch. 2 up until "The Supply of Money")
   b) Money supply (Friedman Ch. 2, section on "The Supply of Money"; Mishkin Ch. 3; Ch. 14; Ch. 15 pg. 341-348; GLS Ch. 31; Rendahl and Freund "Banks do not Create Money out of Thin Air")
   c) Money demand (Friedman Ch. 2, part on "The Demand for Money"; Mishkin Ch. 19; the rest of Friedman Ch. 2)
   d) Conventional monetary policy and the macroeconomy (Mishkin Ch. 20, Ch. 21, Ch. 23 pg. 553-569)
   e) The Federal Reserve (Mishkin Ch. 13); central bank design, mandates, transparency, and accountability (Crowe and Meade "The Evolution of Central Bank Governance Around the World"; Haedtler, Levin, and Wilson "Making the Federal Reserve Fully Public: Why and How"); time inconsistency (Chari and Kehoe "Modern Macroeconomics in Practice: How

Theory is Shaping Policy"); modern monetary theory (Mankiw "A Skeptic's Guide to Modern Monetary Theory")

2) **Topics in Finance, Financial Markets, and Banking**
   a) Bond pricing and the term and risk structure of interest rates (Mishkin Ch. 4; Ch. 5 pg. 85-100; Ch. 6; GLS Ch. 33; Poole "Understanding the Term Structure")
   b) Stock market (Mishkin Ch. 7; GLS Ch. 34)
   c) Adverse selection, moral hazard, and financial structure (Mishkin Ch. 8; *Economist* "Secrets and Agents")
   d) Banking (Mishkin Ch. 9; GLS Ch. 30; GLS Ch. 32; Diamond "Banks and Liquidity Creation")

3) **Crises and Unconventional Monetary Policy**
   a) Financial crises (Mishkin Ch. 12 pg. 267-282); Great Depression and Great Recession (Bernanke "On Milton Friedman's 90th Birthday"; Wheelock "Lessons Learned"; Gorton "Questions and Answers"; Mishkin "Over the Cliff" ; Cechetti "Crisis and Responses")
   b) Unconventional monetary policy and mapping crises and policy responses into the AD-AS model (Mishkin Ch. 15; pg. 355-361; Mishkin Ch. 23; pg. 569-578; Bernanke "Targeting Long Rates"; Wu "Did Quantitative Easing Work?")
   c) Financial and banking regulation (Mishkin Ch. 10; Mishkin Ch. 12 pg. 283-289; Gorton and Metrick "The Federal Reserve and Panic Prevention"; Hanson, Kashyap, and Stein "A Macroprudential Approach")
   d) The Fed and the COVID-19 Crisis (Cechetti and Schoenholtz "Contagion: Bank Runs and COVID-19"; Cechetti and Schoenholtz "COVID-19: What Can Monetary Policy Do?"; Cechetti and Schoenholtz "The Fed Goes to War: Part 1"; Cechetti and Schoenholtz "The Fed Goes to War: Part 2"; Cechetti and Schoenholtz "The Fed Goes to War: Part 3"; Cechetti and Schoenholtz "Fed's Big Stick Lets it Speak Powerfully"; Cheng, Skidmore, and Wessel "What's the Fed Doing in Response to the COVID-19 Crisis?"; more may be added as the situation evolves)

Assignments, Due Dates, and Other Important Dates:

- Online Quizzes: every Friday, starting August 14, except October 2, and on Thursday (instead of Friday) November 12
- Problem Set #1: due Wednesday, August 26
- Problem Set #2: due Wednesday, September 9
- Problem Set #3: due Wednesday, September 23
- Midterm Exam: Monday, September 28
- Paul Ryan Guest Lecture: Wednesday, October 14
- Problem Set #4: due Wednesday, October 21
- Problem Set #5: due Wednesday, November 11
- Final Exam: Thursday, November 19