

Syllabus
Intermediate Macroeconomic Theory
Eric Young
ECO 3020
Spring 2017

1. Course Objective

The recipients of the Nobel Prize for Economic Science in 2004 – Finn Kydland and Ed Prescott – were instrumental in engineering a transformation of macroeconomics. One of their cited theoretical contributions was to show the profession that macroeconomics could be done using the language of microeconomics – that is, we could understand the economy as a big system of people and firms interacting in markets for goods and services, a "bottom up" approach that was drastically different from the "top-down" system of equations approach that dominated at the time. By specifying the preferences of people (what they like), the technologies of firms (what they can produce and how they can produce it), and the resources of the economy (how much there is), economists can use theory to predict the answers to important economic questions that cannot be answered by the data alone. This approach was advanced much earlier as a desirable goal – Ken Arrow stated that the relation between microeconomics and macroeconomics was "one of the major scandals of price theory" and Bob Lucas had laid the intellectual groundwork through his famous critique of policy advice – but Kydland and Prescott were finally able to put all the pieces together.

The key step is to build a model, a simplified version of reality, and examine how people behave within the context of this model. If the model mimics reality well, it can be used to study policies that would be prohibitively expensive to study in actual economies. Building a model can be thought of as constructing a measuring instrument that measures the effects of changes in the economic environment. To use this analogy further, consider how you determine whether a thermometer works – you put it in a bucket of ice water and a bucket of boiling water. If the readings are 0° Celsius and 100° Celsius, respectively, you have reason to believe that your thermometer will accurately measure the temperature outside. Our model will be calibrated to accurately answer questions whose answers we know, which is basically the question "What happened in the past 500 years?" By matching the observed data, we can be confident in using the model to evaluate the consequences of different policies in the past and potential ones for the future. An important aspect of building a model is to know what to leave out – after all, a map of Charlottesville with all

the detail would be the same size as Charlottesville and thus not very useful. Testing the model then involves checking whether we left something important out; that is, do the answers change if we add in more detail?

This class will start with what most would argue is the most important question in macroeconomics – why are some countries so much poorer than others? We begin by building a model of long-run growth that matches two important facts: (1) standards of living were stagnant until 1750 in the US and (2) since 1750 standards of living have grown at a rapid but nearly-constant exponential rate (the Industrial Revolution, by far the most significant economic event in history). Clearly, the transition from an agrarian economy to an industrial economy is critical for such a transformation, so we will try to explore whether the Industrial Revolution was inevitable or the result of well-designed policy and institutional design. Having built a model that roughly captures the facts, we will use it to explore why some countries – Latin America, Africa – have remained relatively poor while others – Southeast Asia, China – have been catching up to the industrial leaders. We will also have something to say about why some countries experienced industrial revolutions earlier than others. Since our model matches the long-run growth of the world economy, there is reason to believe it will give accurate answers to these unknown questions.

Having understood the basic mechanism of long-run growth, we next take aim at short-run fluctuations around the long-run growth path, often called the business cycle. In the US, aggregate measures of production experience swings up and down that amount to almost 2 percent, and these swings last for about 3 years from peak to peak. In addition, real consumption, investment, and total hours worked tend to move with production, so that the business cycle is characterized by the tendency of many aggregates to go up and down together (which justifies calling it "the" business cycle instead of many). Using the model that matched the long-run growth facts and feeding in the observed movements in certain variables believed to be outside the control of the households and firms in the economy, we check to see what kind of impulses (often called "shocks") produce the right sort of movements in these aggregates, both in terms of qualitative issues (do they move in the right directions) and quantitative ones (do they move the right amount). Again, by carefully calibrating the model to produce the observed data over the long-run, we can confidently answer questions about the short-run.

Armed with a model that captures both long-run and short-run growth facts, we will use it to explore the effects of government policy. Broadly defined, policy falls into three categories – fiscal (taxes, spending, and debt), monetary (money growth, banking regulation), and institutional

(other regulations); the distinction can become murky, however, when the Federal Reserve engages in quantitative easing (buying long-term debt), but there is no particular need to be picky over what policies fall into what categories. Using our model, we measure the effects of these policies in an attempt to answer two questions: (1) what has been the effects of policies in the past? and (2) what are the effects of policies that are being contemplated for the future? Since our model matches the historical data well, we can isolate the effects of government behavior and determine what would have happened if the government did (or did not) change something. Similarly, since our model matches the data, we can be confident in the answers it gives us about the effects of policies that are being considered.

2. Texts

The required texts for the class are

- Miller, Merton H. and Charles W. Upton (1974), *Macroeconomics: A Neoclassical Introduction*, University of Chicago Press.
- Champ, Bruce, Scott Freeman, and Joseph Haslag (2011), *Modeling Monetary Economies*, Third Edition, Cambridge University Press.

Additional readings, such as articles and notes, will be made available at the course website on Collab. In particular, there are two articles from the Minneapolis Federal Reserve Economic Quarterly that you will be responsible for, one by Kydland and Prescott and the other by James Schmitz. The Schmitz article will not be discussed in class, but you will be responsible for understanding the author's message in the Introduction (the first four pages); the Kydland and Prescott article will be extensively presented in lecture. Finally, you are also responsible for reading 1995 Nobel Laureate Robert Lucas's 1988 Commencement Address at the University of Chicago. Questions from these readings may (and probably will) appear on exams.

This course is a class in economic theory – it is not a class in macroeconomics for practitioners. The purpose is to give you a framework useful for posing big questions in macroeconomics, not to tell you how to forecast macroeconomic aggregates or stock prices. As such, it will be more abstract than you may be expecting, and certainly more abstract than 2020 was – our model will be very simple out of necessity. The data will be our guide – remember, a model is useful if it matches the data, even if it appears simple. The textbooks reflect this abstractness and are

relatively difficult to read on your own; I suggest doing the readings after the class lecture on the topic, rather than before, and I promise not to call on you in class. We will also use material from 3010 (Intermediate Microeconomic Theory) without comment, so you should probably reconsider attempting the class without having taken 3010; while technically a prerequisite for this course, SIS does not appear to enforce it.

3. Outline

The outline below is tentative. Discussion sections will be used to work example problems and go over new material, so attendance will be important. We may fall behind or get ahead, depending on the rate at which material is covered; if that is the case, it is your responsibility to be aware of it. The date of exams will not change nor will the posting date of homeworks; for unusual circumstances the due date for homeworks may be pushed back (but never forward).

- January 18 – Introduction (Lucas article to be read)
- January 23 – Malthusian Growth Model (Chapter 1, MU)
- January 25 – National Income Accounts (Chapter 2, MU)

Homework 1 Posted

- January 30 – Solow Growth Model (Chapter 2, MU)
- February 1 – Solow Growth Model Cont. (Chapter 2, MU)

Homework 1 Due

- February 6 – More on Solow (Chapter 3, MU)
- February 8 – Industrial Revolutions (Schmitz article to be read)

Homework 2 Posted

- February 13 – Consumption/Savings Decisions (Chapter 4, MU)
- February 15 – More on Consumption/Savings (Chapter 4, MU)

Homework 2 Due

- February 20 – Life Cycle Savings (Chapter 5, MU)

- February 22 – **Midterm 1**
- February 27 – More on Life Cycle Savings, Permanent Income (Chapter 5, MU, Including Appendix)
- March 1 – Long-Run Growth Revisited (Chapter 6, MU)

Homework 3 Posted

- March 6-10 – Spring Break
- March 13 – Labor Supply
- March 15 – Investment

Homework 3 Due

- March 20 – Business Cycles I (Kydland and Prescott article to be read)
- March 22 – Business Cycles II
- March 27 – Fiscal Policy: Government Spending and Taxes (Chapter 7, MU)
- March 29 – **Midterm 2**

- April 3 – Fiscal Policy: Government Debt (Chapter 8, MU)
- April 5 – Money and Savings (Chapter 1, CFH)

Homework 4 Posted

- April 10 – Money and Inflation (Chapter 3, CFH, Chapter 12 MU)
- April 12 – Money and Inflation Again (Chapter 3, CFH, Chapter 12, MU)

Homework 4 Due

- April 17 – Money and Banking (Chapter 13, MU, Chapter 6, CFH)
- April 19 – Money Multipliers (Chapter 9, CFH)

Homework 5 Posted

- April 24 – Phillips Curve (Chapter 5, CFH)

- April 26 – Temptation of Inflation (Chapter 17, CFH)

Homework 5 Due

- May 1 – Review
- May 8, 9:00 AM-12:00 PM – **Final Exam**

4. Grading

Your course grade will be computed as follows:

- 5 Homeworks (**5%** each, lowest dropped);
- 2 Midterms (**20%** each);
- Final Exam (**40%**).

Makeup exams are not permitted. You may work together on homework assignments, but everyone must turn in a separate assignment. Assignments which are illegible will be considered incorrect, so please take some time to make your answers presentable. Homework assignments are due at the beginning of the class lecture indicated on the syllabus; any late homework will not be counted. The homework assignments are not generally intended to be practice for exams, but rather to pose questions that would be inappropriate for an exam environment (particularly those with quantitative answers) – you will receive the occasional example questions in discussion that are intended to give you practice for the exams. The grade of your final will replace one of the midterm grades, if that is to your benefit, but not your homework aggregate; if you miss an exam, that option is automatically invoked.

I do not take attendance, but attendance will likely be related to performance, as the textbooks are challenging and the lectures contain information not available in the books. Discussion sections will be used to cover new material, go over homeworks and exams, and work sample problems. Solutions to assignments will only be made available during discussions.

5. Contact Info

- Office: 242 Monroe Hall
- Phone: 434-924-3811

- Email: ey2d@virginia.edu

My official office hours will be from 1:00-3:00 pm on Monday afternoon; I ask that you respect this time and try to visit during it. I will accommodate those who cannot make these office hours due to classes. The TA for this class is Seunghyeon Lee (sl4rx@virginia.edu). Each of you will be in a discussion section led by Seunghyeon on Wednesday evenings (5:00 PM, 6:00 PM, 7:00 PM). I ask you not to attend other sections unless you clear it with him first, as I don't want some sections to become overcrowded and others depopulated. He will hold office hours at times specified during the first discussion section, and there will be discussion sections the first week of classes.

6. Honor Code

Academic dishonesty in this course will not be tolerated in any form. You all understand the importance that the Honor Code has here at Virginia, and I expect you will hold up your end of the bargain. An explicit statement of the Honor Policy for the class can be found on Collab. You may work together on homework assignments, as noted above.