

Syllabus

Frontiers in Macroeconomics

Goal: This course serves as an introduction into the methods and techniques used in modern macroeconomics. We will begin with basic growth theory models, move onto models of business cycles and conclude with models currently used in monetary policy. Along the way, we will develop some useful modeling tools: namely, dynamic programming, discrete state Markov processes, and solution methods for linear rational expectations business cycle models.

Professor: Kevin D. Salyer

Text: *Advanced Macroeconomics*, David Romer. This works as a reasonable introduction but lacks depth. It is currently in its third edition, but if you can find a cheaper first edition, that will do. We will supplement this text with journal articles.

Suggested Texts: A good comprehensive treatment of growth theory can be found in *Economic Growth* by R. Barro and X. Sala-i-Martin. For international economics, the standard text is by M. Obstfeld and K. Rogoff, *Foundations of International Macroeconomics*. Both of these books cover growth theory in more detail than Romer. A nice introduction of solving and estimating macroeconomic models is the recent text by David Dejong with Chetan Dave, *Macroeconometric Analysis*. For monetary policy, I highly recommend the texts by Carl Walsh, *Monetary Theory and Policy* (the second edition is preferred over the first), and Michael Woodford's modern classic, *Interest and Prices*.

March 10: Overview of the Course, Growth Theory, the Overlapping Generations Model

We study the workhorse of modern macroeconomics: the model of growth as first proposed by Solow (and Swan) and then extended by Cass-Koopmans. In addition, we will examine Samuelson's overlapping generations model, another useful macroeconomic framework.

Readings: Chapters 1-3 in Romer.

1. Lucas, *Methods and Problems in Business Cycle Theory*.
2. Lucas, *Understanding Business Cycles*.
3. Lucas, *Models of Business Cycles* (excerpt).

March 11: Introduction to Stochastic Dynamic Economies

Today we begin our study of modern business cycle models. These are typically discrete time versions of the optimal growth model studied on Monday with one critical addition: uncertainty. To build up the tools necessary to look at models with production, we first study an exchange setting with uncertainty and introduce the dynamic optimization method of dynamic programming. We use this method to examine the behavior of asset prices within the context of the consumption-based capital asset pricing model. We will also discuss the concepts of a *recursive competitive equilibrium*, testing models through calibration, and the celebrated equity premium puzzle.

Readings: Romer, Chapter 7.

4. Sargent, *Dynamic Macroeconomic Theory*, Chapter 1.
5. Lucas, Stokey, Prescott, *Recursive Methods in Economic Dynamics*, Chap 2.
6. Handout on dynamic programming.
7. Salyer, Handout on Markov Processes.
8. Salyer, *The Characterization of Savings Under Uncertainty*.
9. Lucas, R.E., Jr., *Asset Prices in an Exchange Economy* (first three sections only).
10. LeRoy and LaCivita, *Risk Aversion and the Dispersion of Asset Prices*.
11. Summers, *The Scientific Illusion in Empirical Macroeconomics*.
12. Mehra and Prescott, *The Equity Premium: A Puzzle*.
13. Rietz, *The Equity Premium: A Solution*.

March 12 & 13: Consumption Theory and Real Business Cycle Models

After a quick review of the permanent income hypothesis, we begin in earnest our study of modern business cycle theory. The basic model is the stochastic growth model with stochastic shocks to production – this is known as the real business cycle (RBC) model. Since this model has no analytic solution, we must use numerical methods to compute the equilibrium. An overview of the simplest method, linearizing around the steady-state, will be presented. We will discuss some empirical features of business cycles and use these to assess the performance of the RBC model. Our last topic in this section will be a discussion of economies that are driven by self-fulfilling belief shocks.

Readings: Romer, Chapter 4.

14. Hall, *Stochastic Implications of the Life Cycle-Permanent Income Hypothesis*.
15. Cooley, *Frontiers of Business Cycle Research, Chapter 1*.
16. Kydland & Prescott, *Real Facts and a Monetary Myth*.
17. HHS, *A User's Guide to Solving Real Business Cycle Models*.
18. Hansen and Wright, *The Labor Market in Real Business Cycle Theory*.
19. Campbell, *Inspecting the Mechanism: An Analytical Approach to the Stochastic Growth Model*.
20. Stadler, *Real Business Cycles*.
21. Cogley & Nason, *Output Dynamics in Real Business Cycle Models*.
22. Salyer, *The Macroeconomics of Self Fulfilling Prophecies: A Review Essay*.
23. Benhabib & Farmer, *Indeterminacy and Sunspots in Macroeconomics*.

March 14: Monetary Models

We conclude the course with an introduction to general equilibrium monetary models. We look at two extensions of the optimal growth model that include a demand for money: (1) A model by M. Sidrauski in which real balances enter the utility function and (2) A model by A. Stockman in which agents face (in addition to the normal budget constraint) a cash-in-advance constraint which states that purchases must be financed out of money holdings. Time permitting, we will then discuss the New Keynesian framework which has become the standard approach in discussing monetary policy.

Readings:

24. Tobin, *Money and Economic Growth*.
25. Sidrauski, *Rational Choice and Patterns of Growth in a Monetary Economy*.
26. Stockman, *Anticipated Inflation and the Capital Stock in a Cash-in-Advance Economy*.
27. Cooley and Hansen, *The Inflation Tax in a Real Business Cycle Model*.
28. Gertler, M., "Notes on Sticky Price Models."

29. Clarida, Gali, and Gertler, *The Science of Monetary Policy: A New Keynesian Perspective*.