

Economics 701
Advanced Macroeconomics I
Syllabus
Professor Sanjay Chugh
Fall 2008

Meetings: Tuesdays and Thursdays, 9:30am-10:45am, Tydings 1132

Email address: chughs@econ.umd.edu

Course website: www.skchugh.com (through the “Teaching” link)

Prerequisites: The first-year economics Ph.D. sequence (in particular, Econ 601 and 602). Auditors and other upper-level students welcome, but are expected to actively participate in both class discussion and assignments.

Grading:

The final course grade will be based on:

1. Completing a “computational primer”: solving computationally for the deterministic steady state of a few extensions of the basic RBC model – **20% of final grade.**
2. Computationally solving and simulating the basic RBC model, tabulating basic business cycle statistics, etc. (written up as a paper) – **20% of final grade.**
3. Computationally solving and simulating a basic labor search model, tabulating basic business cycle statistics, etc. (written up as a paper) – **20% of final grade.**
4. Computationally solving an extension of the basic RBC model, tabulating basic business cycle statistics, etc. (written up as a paper) – **20% of final grade.**
5. In-class presentation of a paper (from a designated set of papers) – **20% of final grade.**

Reference Texts:

Some “all-purpose” macroeconomics texts that are likely to be useful to have on your shelf:

1. *Frontiers of Business Cycle Research*, 1995. Edited by Thomas F. Cooley. Princeton University Press.
2. *Monetary Policy, Inflation, and the Business Cycle: An Introduction to the New Keynesian Framework*, 2008. By Jordi Gali. Princeton University Press.
3. *Equilibrium Unemployment Theory*, 2nd edition, 2000. By Christopher A. Pissarides. MIT Press.
4. *Interest and Prices: Foundations of a Theory of Monetary Policy*, 1st edition, 2003. By Michael Woodford. Princeton University Press.

5. *Dynamic Macroeconomic Analysis: Theory and Policy in General Equilibrium*, 2003. Edited by Sumru Altug, Jagjit S. Chadha, and Charles Nolan. Cambridge Press.
6. *Recursive Macroeconomic Theory*, 2nd edition, 2004. By Lars Ljungqvist and Thomas J. Sargent. MIT Press.
7. *Recursive Methods in Economic Dynamics*, 1989. By Nancy L. Stokey and Robert E. Lucas, Jr., with Edward C. Prescott. Harvard University Press.

Objectives:

There are three fundamental objectives we will set out for ourselves:

1. The most basic objective of the course is to trace through some seminal advances in macroeconomic theory over the past 30 years. Most of the emphasis during our tour will be on business cycle modeling and policy issues, which, after all, were the proximate causes of the revolution in macroeconomics 30 years ago. We will trace these arcs of thought through to modern-day quantitative general equilibrium business cycle models and policy analysis and identify/examine where some of the current research frontiers lie.
2. Another fundamental objective is to get started on learning how to computationally solve general equilibrium business cycle models. Beyond the simplest of models, modern macroeconomics is generally quite computationally intensive. We will study the most basic tools that macroeconomists typically use to approximate and solve business cycle models. This means “rolling up your sleeves” and learning (if you do not know already) some basic programming and computing techniques. Our laboratory for developing computational techniques will be the basic RBC model and some slight extensions of the basic model.
3. Finally, a necessary condition to be a successful economist (not just a successful macroeconomist) is effective communication skills, both written and spoken. It is never too early to begin (or continue) developing such skills. I will insist that all assignments/projects be written as if they were small “papers,” with a clear motivation laid out at the outset, a clear presentation of the model(s) used, a clear description of the methodology employed, effective presentation of and discussion of results, and so on. The required in-class presentation of a paper (from among the set of papers designated as “student presentation” below) also fosters this objective.

In all written submissions, the following should be crystal clear after the abstract and the first two paragraphs of your paper: the basic question your paper/project addresses; the big-picture answer(s) your paper provides; why this ought to be of interest to macroeconomists; and (related) how/along what dimensions your work advances the relevant field of knowledge. If, after reading the first two paragraphs of your submission, I judge that you have not laid these issues out clearly, I will return your paper to you ungraded for you to improve and resubmit.

Outline of Topics: The following is a sketch of topics we will cover this semester – it may be modified, depending on time constraints and student and professor interest, as the course progresses.

Modern Macroeconomics – The (Evolving) Agenda

1. **(Required)** Prescott, Edward C. 2006. “Nobel Lecture: The Transformation of Macroeconomic Policy and Research.” *Journal of Political Economy*, Vol. 114, pp. 203-235.
2. **(Required)** Mankiw, N. Gregory. 2006. “The Macroeconomist as Scientist and Engineer.” *Journal of Economic Perspectives*, Vol. 20, pp. 29-46.
3. **(Required)** Blanchard, Olivier J. 2008. “The State of Macro.” NBER Working Paper No. 14259.
4. **(Required)** Akerlof, George A. 2007. “The Missing Motivation in Macroeconomics.” *American Economic Review*, Vol. 97, pp. 5-36.
5. Kydland, Finn E. 2006. “Nobel Lecture: Quantitative Aggregate Economics.” *American Economic Review*, Vol. 96, pp. 1373-1383.
6. Lucas, Robert E. 1995. “Monetary Neutrality.” Nobel Lecture.
7. Solow, Robert M. 1987. “Growth Theory and After.” Nobel Lecture
8. Chari, V.V. and Patrick J. Kehoe. 2006. “Modern Macroeconomics in Practice: How Theory is Shaping Policy.” *Journal of Economic Perspectives*, Vol. 20, pp. 3-28.
9. Rebelo, Sergio T. 2005. “Real Business Cycle Models: Past, Present, and Future.” NBER Working Paper No. 11401.

Review of Basic DSGE Framework

10. King, Robert G. and Sergio T. Rebelo. 1999. “Resuscitating Real Business Cycles.” In *Handbook of Macroeconomics*, Vol. 1B, edited by John B. Taylor and Michael Woodford.
11. McGrattan, Ellen R. 2006. “Real Business Cycles.” Federal Reserve Bank of Minneapolis Staff Report No. 370.

Basic Computational Methods

12. **(Required)** Schmitt-Grohe, Stephanie and Martin Uribe. 2004. "Solving Dynamic General Equilibrium Models Using a Second-Order Approximation to the Policy Function." *Journal of Economic Dynamics and Control*, Vol. 28, pp. 755-775.
13. Aruoba, S. Boragan, Jesus Fernandez-Villaverde, and Juan F. Rubio-Ramirez. 2006. "Comparing Solution Methods for Dynamic Equilibrium Economies." *Journal of Economic Dynamics and Control*, Vol. 30, pp. 2477-2508.
14. Uhlig, Harald. 1999. "A Toolkit for Analyzing Nonlinear Dynamic Stochastic Models Easily." In *Computational Methods for the Study of Dynamic Economies*, edited by Ramon Marimon and Andrew Scott. Oxford Press.

Quantitative Macroeconomic Models I: Some Early Developments

15. **(Required)** Rogerson, Richard. 1988. "Indivisible Labor, Lotteries and Equilibrium." *Journal of Monetary Economics*, Vol. 21, pp. 3-16.
16. **(Required)** Hansen, Gary D. 1985. "Indivisible Labor and the Business Cycle." *Journal of Monetary Economics*, Vol. 16, pp. 309-327.
17. **(Required)** Cho, Jang-Ok and Thomas F. Cooley. 1994. "Employment and Hours Over the Business Cycle." *Journal of Economic Dynamics and Control*, Vol. 18, pp. 411-432.
18. Campbell, John Y. 1994. "Inspecting the Mechanism: An Analytical Approach to the Stochastic Growth Model." *Journal of Monetary Economics*, Vol. 33, pp. 463-506.
19. Ingram, Beth F., Narayana R. Kocherlakota, and N.E. Savin. 1994. "Explaining Business Cycles: A Multiple-Shock Approach." *Journal of Monetary Economics*, Vol. 34, pp. 415-428.
20. **(Required)** Cooley, Thomas F. and Gary D. Hansen. 1989. "The Inflation Tax in a Real Business Cycle Model." *American Economic Review*, Vol. 79, pp. 733-748.
21. **(Required)** Cooley, Thomas F. and Gary D. Hansen. 1991. "The Welfare Costs of Moderate Inflation." *Journal of Money, Credit, and Banking*, Vol. 23, pp. 483-503.

22. Cooley, Thomas F. and Gary D. Hansen. 1995. "Money and the Business Cycle." In *Frontiers of Business Cycle Research*, edited by Thomas F. Cooley. Princeton University Press.

Quantitative Macroeconomic Models II: Monopoly and Sticky Price Models

23. **(Required)** Rotemberg, Julio J. and Michael Woodford. 1995. "Dynamic General Equilibrium Models with Imperfectly Competitive Product Markets." In *Frontiers of Business Cycle Research*, edited by Thomas F. Cooley. Princeton University Press.
24. Kimball, Miles S. 1995. "The Quantitative Analytics of the Basic Neomonetarist Model." *Journal of Money, Credit, and Banking*, Vol. 27, pp. 1241-1277.
25. **(Required)** Calvo, Guillermo A. 1983. "Staggered Prices in a Utility-Maximizing Framework." *Journal of Monetary Economics*, Vol. 12, pp. 383-398.
26. **(Required)** Yun, Tack. 1996. "Nominal Price Rigidity, Money Supply Endogeneity, and Business Cycles." *Journal of Monetary Economics*, Vol. 37, pp. 345-370.
27. **(Required)** Chari, V.V., Patrick J. Kehoe, and Ellen R. McGrattan. 2000. "Sticky Price Models of the Business Cycle: Can the Contract Multiplier Solve the Persistence Problem?" *Econometrica*, Vol. 68, pp. 1151-1179.
28. **(Required)** Gali, Jordi and Mark Gertler. 2007. "Macroeconomic Modeling for Monetary Policy Evaluation." *Journal of Economic Perspectives*, Vol. 21, pp. 25-45.
29. Dixit, Avinash K. and Joseph E. Stiglitz. 1977. "Monopolistic Competition and Optimum Product Diversity." *American Economic Review*, Vol. 67, pp. 297-308.
30. Blanchard, Olivier J. and Nobuhiro Kiyotaki. 1987. "Monopolistic Competition and the Effects of Aggregate Demand." *American Economic Review*, Vol. 77, pp. 647-666.
31. Spence, Michael. 1976. "Product Selection, Fixed Costs, and Monopolistic Competition." *Review of Economic Studies*, Vol. 43, pp. 217-235.
32. Mankiw, N. Gregory. 1985. "Small Menu Costs and Large Business Cycles: A Macroeconomic Model of Monopoly." *Quarterly Journal of Economics*, Vol. 100, pp. 529-538.
33. Taylor, John B. 1980. "Aggregate Dynamics and Staggered Contracts." *Journal of Political Economy*, Vol. 88, pp. 1-23.

34. Rotemberg, Julio J. 1982. "Sticky Prices in the United States." *Journal of Political Economy*, Vol. 90, pp. 1187-1211.
35. Roberts, John M. 1995. "New Keynesian Economics and the Phillips Curve." *Journal of Money, Credit, and Banking*, Vol. 27, pp. 975-984.
36. Rotemberg, Julio J. and Michael Woodford. 1998. "An Optimization-Based Econometric Framework for the Evaluation of Monetary Policy: Expanded Version." NBER Technical Working Paper 233.
37. Taylor, John B. 1999. "Staggered Price and Wage Setting in Macroeconomics." In *Handbook of Macroeconomics*, Vol. 1B, edited by John B. Taylor and Michael Woodford.
38. Basu, Susanto and John G. Fernald. 1997. "Returns to Scale in U.S. Production: Estimates and Implications." *Journal of Political Economy*, Vol. 105, pp. 249-283.
39. Sbordone, Argia M. 2002. "Price and Unit Labor Costs: A New Test of Price Stickiness." *Journal of Monetary Economics*, Vol. 49, pp. 265-292.
40. **(Student Presentation)** Bils, Mark and Peter J. Klenow. 2004. "Some Evidence on the Importance of Sticky Prices." *Journal of Political Economy*, Vol. 112, pp. 947-985.

Quantitative Macroeconomic Models III: Unemployment

41. **(Required)** Rogerson, Richard, Robert Shimer, and Randall Wright. 2005. "Search-Theoretic Models of the Labor Market: A Survey." *Journal of Economic Literature*, Vol. 43, pp. 959-988.
42. **(Required)** Shimer, Robert. 2005. "The Cyclical Behavior of Equilibrium Unemployment and Vacancies." *American Economic Review*, Vol. 95, pp. 25-49.
43. **(Required)** Hall, Robert E. 2005. "Equilibrium Wage Stickiness." *American Economic Review*, Vol. 95, pp. 50-65.
44. **(Required)** Andolfatto, David. 1996. "Business Cycles and Labor Market Search." *American Economic Review*, Vol. 86, pp. 112-132.
45. denHaan, Wouter J., Garey Ramey, and Joel Watson. 2000. "Job Destruction and Propagation of Shocks." *American Economic Review*, Vol. 90, pp. 482-498.

46. Merz, Monika. 1995. "Search in the Labor Market and the Real Business Cycle." *Journal of Monetary Economics*, Vol. 36, pp. 269-300.
47. Gertler, Mark and Antonella Trigari. 2006. "Unemployment Fluctuations with Staggered Nash Bargaining." Manuscript, New York University.
48. Hagedorn, Marcus and Iourii Manovskii. 2007. "The Cyclical Behavior of Equilibrium Unemployment and Vacancies Revisited." *American Economics Review*. Forthcoming.
49. Pissarides, Christopher A. 2000. *Equilibrium Unemployment Theory*. MIT Press.
50. Moen, Espen. 1997. "Competitive Search Equilibrium." *Journal of Political Economy*, Vol. 105, pp. 385-411.

Quantitative Macroeconomic Models IV: Some Frontier Developments

51. **(Student Presentation)** Christiano, Lawrence J., Martin Eichenbaum, and Charles L. Evans. 2005. "Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy." *Journal of Political Economy*, Vol. 113, pp. 1-45.
52. **(Student Presentation)** Chari, V.V., Patrick J. Kehoe, and Ellen R. McGrattan. 2007. "Business Cycle Accounting" *Econometrica*, Vol. 75, pp. 781-836.
53. **(Student Presentation)** Fisher, Jonas D. M. 2006. "The Dynamic Effects of Neutral and Investment-Specific Technology Shocks." *Journal of Political Economy*, Vol. 114, pp. 413-451.
54. Smets, Frank and Rafael Wouters. 2003. "An Estimated Stochastic Dynamic General Equilibrium Model of the Euro Area." *Journal of the European Economic Association*, Vol. 1, pp. 1123-1175.
55. **(Student Presentation)** Smets, Frank and Rafael Wouters. 2007. "Shocks and Frictions in U.S. Business Cycles." *American Economic Review*, Vol. 97, pp. 586-606.
56. **(Student Presentation)** Chari, V.V., Patrick J. Kehoe, and Ellen R. McGrattan. 2008. "The New Keynesian Model is Not Yet Ready for Policy Analysis." *AEJ: Macroeconomics*. Forthcoming
57. **(Student Presentation)** Atkeson, Andrew and Patrick J. Kehoe. 2008. "On the Need for a New Approach to Analyzing Monetary Policy." *NBER Macroeconomics Annual*. Forthcoming.

Optimal Policy I: The New Keynesian Approach

58. Clarida, Richard, Jordi Gali, and Mark Gerlter. 1999. "The Science of Monetary Policy: A New Keynesian Perspective." *Journal of Economic Literature*, Vol. 37, pp. 1661-1707.
59. **(Required)** King, Robert G. and Alexander L. Wolman. 1999. "What Should the Monetary Authority Do When Prices Are Sticky?" In *Monetary Policy Rules*, edited by John B. Taylor. NBER Conference Volume on Research in Business.
60. **(Required)** Erceg, Christopher J., Dale W. Henderson, and Andrew Levin. 2000. "Optimal Monetary Policy with Staggered Wage and Price Contracts." *Journal of Monetary Economics*, Vol. 46, pp. 281-313.
61. Goodfriend, Marvin and Robert G. King. 2001. "The Case for Price Stability." NBER Working Paper No. 8423.
62. Woodford, Michael. 2003. *Interest and Prices: Foundations of a Theory of Monetary Policy*. Princeton University Press.

Optimal Policy II: The Ramsey Approach

63. Ramsey, Frank. 1927. "A Contribution to the Theory of Taxation." *Economic Journal*, Vol. 37, pp. 47-61.
64. Phelps, Edmund. 1973. "Inflation in the Theory of Public Finance." *Swedish Journal of Economics*, Vol. 75, pp. 67-82.
65. Lucas, Robert E. and Nancy L. Stokey. 1983. "Optimal Fiscal and Monetary Policy in an Economy Without Capital." *Journal of Monetary Economics*, Vol. 12, pp. 55-93.
66. Chamley, Christophe. 1986. "The Welfare Cost of Capital Income Taxation in a Growing Economy." *Econometrica*, Vol. 54, pp. 607-622.
67. **(Required)** Chari, V.V., Lawrence J. Christiano, and Patrick Kehoe. 1991. "Optimal Fiscal and Monetary Policy: Some Recent Results." *Journal of Money, Credit, and Banking*, Vol. 23, pp. 519-539.
68. Chari, V.V. and Patrick J. Kehoe. 1999. "Optimal Fiscal and Monetary Policy." In *Handbook of Macroeconomics*, Vol. 1C, edited by John B. Taylor and Michael Woodford.

69. Calvo, Guillermo and Pablo E. Guidotti. 1993. "On the Flexibility of Monetary Policy: The Case of the Optimal Inflation Tax." *Review of Economic Studies*, Vol. 60, pp. 667-687.
70. **(Required)** Schmitt-Grohe, Stephanie and Martin Uribe. 2004. "Optimal Fiscal and Monetary Policy Under Imperfect Competition." *Journal of Macroeconomics*, Vol. 26, pp. 183-209.
71. **(Required)** Schmitt-Grohe, Stephanie and Martin Uribe. 2004. "Optimal Fiscal and Monetary Policy Under Sticky Prices." *Journal of Economic Theory*, Vol. 114, pp. 198-230.
72. Siu, Henry E. 2004. "Optimal Fiscal and Monetary Policy with Sticky Prices." *Journal of Monetary Economics*, Vol. 51, pp. 576-607.
73. **(Required)** Chugh, Sanjay K. 2006. "Optimal Fiscal and Monetary Policy with Sticky Wages and Sticky Prices." *Review of Economic Dynamics*, Vol. 9, pp. 683-714.
74. Chugh, Sanjay K. 2007. "Optimal Inflation Persistence: Ramsey Taxation with Capital and Habits." *Journal of Monetary Economics*, Vol. 54, pp. 1809-1836.
75. **(Required)** Arseneau, David M. and Sanjay K. Chugh. 2008. "Optimal Fiscal and Monetary Policy with Costly Wage Bargaining." *Journal of Monetary Economics*. Forthcoming.
76. Aruoba, S. Boragan and Sanjay K. Chugh. 2006. "Optimal Fiscal and Monetary Policy When Money is Essential." International Finance Discussion Paper no. 880. Federal Reserve Board of Governors.

Prices and Macroeconomics: Some Recent Theoretical Developments

77. Golosov, Mikhail and Robert E. Lucas. 2007. "Menu Costs and Phillips Curves." *Journal of Political Economy*, Vol. 115, pp. 171-199.
78. Menzies, Guido. 2007. "Joint Dynamics of Costs and Prices in Markets with Search Frictions." University of Pennsylvania.
79. Hall, Robert. 2007. "Equilibrium Sticky Prices." Stanford University.
80. Arseneau, David M. and Sanjay K. Chugh. 2007. "Bargaining, Fairness, and Price Rigidity." International Finance Discussion Paper no. 900, Federal Reserve Board of Governors.