

Advanced Macro I

Spring 2011

Instructor: Kateryna Bornukova

Office hours: TBA

E-mail: bornukova@beroc.by

Web Page: www.bornukova.com

Class: Tue. Fri. 9:00-10:20

Description of the course

The course aims to introduce the students to dynamic macroeconomics. We will review some topics in economic series analysis and cover topics like Markov process, Hodrick-Prescott filter, etc. Then we will study the macroeconomic models that became the workhorses of modern macro, with the focus on the neoclassical growth model. We will cover basic theoretical concepts of economic dynamics such as dynamic (stochastic) programming, value function, Bellman equation, Euler equation, recursive equilibrium, etc. Numerical solution methods, calibration and simulation of the models will also be covered.

Topics

1. Time series of actual economies. Growth and cycles. Hodrick-Prescott filter. First and second moments. The stylized facts.
2. The deterministic neoclassical growth model. Planners problem.
3. Characterizing the equilibrium by means of dynamic programming. Bellman equation and value function.
4. Decentralizing the social optimum. Competitive equilibrium.
5. Characterizing the equilibrium by using the first order conditions. Euler equation.
6. The stochastic neoclassical growth model. Markov equilibrium.
7. Two benchmark models of the real business cycle literature:
 - divisible-labor model by Kydland and Prescott (1982);
 - indivisible-labor model by Hansen (1985)
8. Balanced growth. Labor augmenting technological progress.
9. Calibration of economic models.
10. Numerical methods for computing the equilibrium.
11. Heterogeneous agents.
12. OLG models (*if time permits*).
13. Search models (*if time permits*).

Grades

The problem sets, the midterm exam and the final exam will count for 20%, 30% and 50% of the course grade, respectively. The problem sets include both theoretical and computer exercises. The programming language is MATLAB.

Notes on the Calendar

Classes are on Tuesdays and Fridays, 9:00-10:20 a.m. in room number 207. Midterm is scheduled for Friday, April 1st. Note that there will be no class on March 8th and on April 15th; instead we will have classes on March 7th and April 12th.

References

1. Aiyagari, R., 1994, Uninsured idiosyncratic risk and aggregate saving, *Quarterly Journal of Economics* 109(3), 659-684.
2. Chari, V. V., Kehoe, P. and E. McGrattan, 2007, "Business Cycle Accounting", *Econometrica*
3. Christiano L. J. and M. Eichenbaum, 1992, Current real-business-cycle theories and aggregate labor-market fluctuations, *American Economic Review*, vol. 82, n. 3.
4. Cooley T. F., 1995, *Frontiers of business cycle research*, (Princeton University Press).
5. Hansen G., 1985, Indivisible labor and business cycle, *Journal of Monetary Economics*, 16, 309-327.
6. Harris, C. and D. Laibson, 2001, Dynamic choices of hyperbolic consumers, *Econometrica* 69, no 4, 935-959.
7. Hendricks, Lutz (2004). Taxation and Human Capital Accumulation. *Macroeconomic Dynamics* 8(3): 310-334.
8. Judd, K.L., 1998, *Numerical methods in economics*, (MIT Press, Cambridge, MA).
9. Judd, K.L., Maliar, L. and S. Maliar, 2009, Numerically stable stochastic simulation approaches for solving dynamic economic models, NBER working paper 15296.
10. King R., Plosser C. and S. Rebelo, 1988, Production growth and business cycles. The basic neoclassical model, *Journal of Monetary Economics*, 21, 195-232.
11. Krusell, P. and A. Smith, 1998, Income and wealth heterogeneity in the macroeconomy, *Journal of Political Economy* 106(5), 868-896.
12. Krusell, P. and A. Smith, 2000, Consumption-savings decisions with quasi-geometric discounting, CEPR working paper 2651.
13. Krusell, P. and A. Smith, 2001, Consumption-savings decisions with quasi-geometric discounting, Manuscript, forthcoming in *Econometrica*.
14. Ljungqvist, L. and T. Sargent, 2000, *Recursive macroeconomic theory*, (MIT Press, Cambridge, Massachusetts and London, England).

15. Maliar, L. and S. Maliar, 2001, Heterogeneity in capital and skills in a neoclassical stochastic growth model, *Journal of Economic Dynamics and Control*, 25 (9), 1367-1397.
16. Maliar, L., and S. Maliar, 2003, The representative consumer in the neoclassical growth model with idiosyncratic shocks, *Review of Economic Dynamics* 6, 362-380.
17. Maliar, L., and S. Maliar, 2003, Parameterized expectations algorithm and the moving bounds, *Journal of Business and Economic Statistics* 21, 88-92.
18. Maliar, L., Maliar, S., and F. Valli, 2010, Solving the incomplete markets model with aggregate uncertainty using the Krusell-Smith algorithm, *Journal of Economic Dynamics and Control*, 34, 42-49.
19. Manuelli, R. and T. Sargent, 1987. *Exercises in Dynamic Macroeconomic Theory*, (Harvard University Press, Cambridge, Massachusetts and London, England).
20. Marimon, R. and A. Scott, 1999, *Computational methods for the study of dynamic economies*, (Oxford University Press).
21. Rebelo, S. 2005, Real Business Cycle Models: Past, Present and Future, *Journal of Scandinavian Journal of Economics*.
22. Rogerson, Richard; Robert Shimer; Randall Wright (2005). "Search-Theoretic Models of the Labor Market: A Survey." *Journal of Economic Literature* 43: 959-988.
23. Sargent, T.J., 1987, *Dynamic macroeconomic theory*, (Harvard University Press, Cambridge, MA).
24. Shimer, Robert (2005). "The Cyclical Behavior of Equilibrium Unemployment and Vacancies." *American Economic Review* 95(1): 25-49.
25. Stockey, N. and R. Lucas, 1989, *Recursive methods in economic dynamics*, (Harvard University Press, Cambridge, MA).
26. Taylor J. and H. Uhlig, 1990, Solving nonlinear stochastic growth models: A comparison of alternative solution methods, *Journal of business and economic statistics*, 8, 1-17.