

Johann Wolfgang Goethe-University
Ph.D. Program in Economics

Professor Dirk Krüger, Ph.D.
Sommersemester 2005

Advanced Macroeconomic Theory II *(Part 2)*

Course Description:

This is the fourth part of a sequence in advanced macroeconomics. It is based on general equilibrium theory and consists of (at most) three self-contained modules. In each module we will combine the learning of techniques with a particular topic. This should motivate to learn the techniques and makes it possible to apply the techniques in assignments. In our study of overlapping generations models we will learn how to analyze models with potentially many, sometimes inefficient equilibria, and apply these techniques to the question of social security (reform). Then we will use continuous time optimization techniques to study modern growth theory, in order to investigate what explains the large international income and income growth rate differentials. Finally we will use some modern measure-theoretic concepts to represent economies with a large number of heterogeneous agents and use the model to analyze what drives the wealth and welfare distribution in modern economies, as well as the impact that government fiscal policy has on these distributions.

Class Time and Location:

Lectures: Tuesday, 10:15 am – 11:45 am, Room: 120B; Thursday, 10:15 am – 11:45 am, Room: 120B.

Course Website:

<http://www.wiwi.uni-frankfurt.de/professoren/krueger/QuantMacro.html>

Course Requirements:

Students in this class are expected to have taken the previous parts of Advanced Macroeconomics and to have basic knowledge of econometric and general equilibrium theory. Grades will be determined based on a final exam (90%), to be taken at the end of class, and three homeworks (10%).

The homeworks will be graded in the following form: you will receive half of the total points for completing all questions. The remaining points will be allocated according to your performance on one of the questions that will be selected at random by me. There will be suggested solutions to the homeworks, so that you receive feedback on all questions, not only the one actually graded.

Students are encouraged to cooperate on homeworks. Every student, however, has to hand in her/his uniquely written assignment and acknowledge cooperation, if any, at the beginning of each homework. In light of the exam the strategy of just copying another student's assignment will prove fatal.

Course Logistics:

Office Hours: Tuesday, 2:00 pm – 3:00 pm, and by appointment

Books:**“Required” Books**

1. Lars Ljungqvist and Thomas J. Sargent, *Recursive Macroeconomic Theory*, The MIT Press (2000) (LS)
2. Nancy L. Stokey and Robert E. Lucas, with Edward C. Prescott, *Recursive Methods in Economic Dynamics*, Harvard University Press (1989) (SLP)

Suggested Further Books

1. Robert Barro and Xavier Sala-i-Martin, *Economic Growth*, McGraw-Hill (1995) (BS)
2. Olivier J. Blanchard and Stanley Fischer, *Lectures on Macroeconomics*, The MIT Press (1989) (BF)
3. Thomas Cooley, *Frontiers of Business Cycle Research*, Princeton University Press (1995), (CO)
4. David Romer, *Advanced Macroeconomics*, McGraw-Hill (1996) (RO)
5. Thomas Sargent, *Dynamic Macroeconomic Theory*, Harvard University Press (1987) (SA)

Course Outline (Lectures):

The following list may prove too ambitious for six weeks, so it is possible that I will not be able to cover all the topics. A general rule is that I will not compromise on rigor. I rather cover less topics, but these carefully, than too many topics superficially. Some of the articles will merely serve as background reading. The articles indicated with a star will form the basis of the material covered in class.

1. Overlapping Generations Economies: Theory and Applications (3 weeks)

*Barro, R. (1974): "Are Government Bonds Net Wealth?," *Journal of Political Economy*, 82, 1095-1117.

Blanchard and Fischer, Chapter 3.

Conesa, J. and D. Krueger (1999): "Social Security Reform with Heterogeneous Agents," *Review of Economic Dynamics*, 2, 757-795.

*Diamond, P. (1965): "National Debt in a Neo-Classical Growth Model," *American Economic Review*, 55, 1126-1150.

Gale, D. (1973): "Pure Exchange Equilibrium of Dynamic Economic Models," *Journal of Economic Theory*, 6, 12-36.

*Geanakoplos, J (1989): "Overlapping Generations Model of General Equilibrium," in J. Eatwell, M. Milgrate and P. Newman (eds.) *The New Palgrave: General Equilibrium*

*Kehoe, T. (1989): "Intertemporal General Equilibrium Models," in F. Hahn (ed.) *The Economics of Missing Markets, Information and Games*, Clarendon Press

Ljungqvist and Sargent, Chapter 8 and 9.

Samuelson (1958): "An Exact Consumption Loan Model of Interest, With or Without the Social Contrivance of Money," *Journal of Political Economy*, 66, 476-82.

Wallace, N. (1980): "The Overlapping Generations Model of Fiat Money," in J.H. Kareken and N. Wallace (eds.) *Models of Monetary Economies*, Federal Reserve Bank of Minneapolis.

2. Growth Models in Continuous Time and their Empirical Evaluation (3 weeks)

Barro, R. (1990): "Government Spending in a Simple Model of Endogenous Growth," *Journal of Political Economy*, 98, S103-S125.

Barro, R. and Sala-i-Martin, X. (1995): *Economic Growth*, McGraw-Hill, Chapters 1,2,4,6 and Appendix

Blanchard and Fischer, Chapter 2

Cass, David (1965): "Optimum Growth in an Aggregative Model of Capital Accumulation," *Review of Economic Studies*, 32, 233-240

Chari, V.V., Kehoe, P. and McGrattan, E. (1997): "The Poverty of Nations: A Quantitative Investigation," Federal Reserve Bank of Minneapolis Staff Report 204.

*Intriligator, M. (1971): *Mathematical Optimization and Economic Theory*, Englewood Cliffs, Chapters 14 and 16.

Jones (1995): "R&D-Based Models of Economic Growth," *Journal of Political Economy*, 103, 759-784.

*Lucas, R. (1988): "On the Mechanics of Economic Development," *Journal of Political Economy*, *Journal of Monetary Economics*

*Mankiw, G., Romer, D. and Weil, D. (1992): "A Contribution to the Empirics of Economic Growth," *Quarterly Journal of Economics*, 107, 407-437.

Ramsey, Frank (1928): "A Mathematical Theory of Saving," *Economic Journal*, 38, 543-559.

Rebelo, S. (1991): "Long-Run Policy Analysis and Long-Run Growth," *Journal of Political Economy*, 99, 500-521.

*Romer (1986): "Increasing Returns and Long Run Growth," *Journal of Political Economy*, 94, 1002-1037.

*Romer (1990): "Endogenous Technological Change," *Journal of Political Economy*, 98, S71-S102.

Romer, D. (1996): *Advanced Macroeconomics*, McGraw-Hill, Chapter 2 and 3
Ljungqvist and Sargent, Chapter 11.

3. Models with Heterogeneous Agents (If there is time at the end)

*Aiyagari, R. (1994): "Uninsured Risk and Aggregate Saving," *Quarterly Journal of Economics*, 109, 659-684.

Aiyagari, A. (1995): "Optimal Capital Income Taxation with Incomplete Markets, Borrowing Constraints, and Constant Discounting," *Journal of Political Economy*, 103, 1158-1175.

Aiyagari R. and McGrattan, E. (1998): "The Optimum Quantity of Debt," *Journal of Monetary Economics*, 42, 447-469

Carroll, C. (1997): "Buffer-Stock Saving and the Life Cycle/Permanent Income Hypothesis," *Quarterly Journal of Economics*, 112, 1-55.

Deaton, A. (1991): "Saving and Liquidity Constraints," *Econometrica*, 59, 1221-1248.

Díaz-Jimenez, J., V. Quadrini and J.V. Ríos-Rull (1997), "Dimensions of Inequality: Facts on the U.S. Distributions of Earnings, Income, and Wealth," *Federal Reserve Bank of Minneapolis Quarterly Review*, Spring.

*Huggett, M. (1993): "The Risk-Free Rate in Heterogeneous-Agent Incomplete-Insurance Economies," *Journal of Economic Dynamics and Control*, 17, 953-969.

Krusell, P. and Smith, A. (1998): "Income and Wealth Heterogeneity in the Macroeconomy," *Journal of Political Economy*, 106, 867-896.

Rios-Rull, V. (1999): "Computation of Equilibria in Heterogeneous-Agent Models," in: R. Marimon and A. Scott (eds.) *Computational Methods for the Study of Dynamic Economies*, Oxford University Press, 238-265.

Sargent and Ljungqvist, Chapter 14.

*Schechtman, J. (1976): "An Income Fluctuation Problem," *Journal of Economic Theory*, 12, 218-241.

Schechtman, J. and Escudero, V. (1977): "Some Results on "An Income Fluctuation Problem", " *Journal of Economic Theory*, 16, 151-166.

Stokey et al., Chapters 7-14.

Calendar

<i>Lecture</i>	<i>Topic</i>	<i>Readings</i>
1	Simple OLG Models	Kehoe (1989)
2	Optimality in OLG Models	Kehoe (1989), LS, Ch. 8
3	Ricardian Equivalence	Barro (1974), LS, Ch. 9
4	OLG Models with Production	Diamond (1965), BF, Ch. 3
5	Large Scale OLG Models	Conesa & Krueger (1999)
6	Growth & Development Facts	Chari et al. (1997)
7	Solow Model	RO, Chapter 2
8	Evaluation of Solow Model	Mankiw et al. (1992)
9	Pontryagin	Intriligator, Ch. 14, BS, App.
10	Cass-Koopmans Model	Intriligator, Ch. 16, BF, Ch. 2
11	Models with Externalities	Romer (1986), Lucas (1988)
12	A Model of Endogenous TP	Romer (1990)
	Final Exam	