Ph.D. Course in Macroeconomics

University of Mannheim

Spring 2002

Instructor: Prof. Stefania Albanesi, Bocconi University and IGIER, email: stefania.albanesi@uni-bocconi.it

Time and Location:

April- Wed. 24, 13.45-17.00, Thu. 25, 13.45-17.00, Fr. 26, 10.15-13.30

April- Mo. 29, 13.45-17.00, Tue. 30, 12.00-13.30 and 13.45-17.00

May- Thu. 2, 12.00-13.30 and 13.45-17.00, Fr. 3, 10.15-13.30

June- TBA

Office Hours: By appointment.

Readings:

Robert E. Lucas, Nancy Stokey with Edward C. Prescott, 1989, *Recursive Methods in Economic Dynamics*, Harvard University Press.

Sargent and Ljungqvist, 2001, *Recursive macroeconomic theory*, MIT Press.

Handouts.

Assigned research papers

Grading: There will be two assignments, a midterm and a final exam. They will count toward the grade as follows.

Assignments	40%
Midterm	30%
Final	30%.

The first assignment is due on May 3. You may work in groups of up to three people for this assignment. Hand in one copy per group.

The midterm will cover items 1 and 2 in the course outline and will be administered on Monday, May 13.

The second assignment is due on June 21. The final will cover item 3 in the course outline and will be administered on ...

Active class participation will be valued on the margin as part of your final grade.

Description of the Course

The purpose of this course is to study the tools needed to develop positive models that can help understand the dynamics of key macroeconomic variables, e.g. employment, output, interest rates and to review the relevant substantive findings reported in the literature.

The first part of the course (April-May) will be devoted to developing the basic building block of macroeconomics: the infinitely lived, deterministic, representative agent growth model. We will focus on two sets of variations. The first will allow us to review a subset of the modern theory of growth. Another set of variations will allow us to review the theory of business cycles.

In the second part of the course (June), we will focus on monetary models. We will first study the basic monetary models. Then, we will introduce "frictions" that make money non-neutral. We will finally address basic issue in optimal monetary policy.

Assigned Research Papers

Growth and Business Cycles (April-May)

Christiano, Lawrence J., and Sharon Harrison, 1998, "Chaos, Sunspots and Automatic stabilizers", Journal of Monetary Economics.

Cooley, Thomas F., and Edward C. Prescott, 1995, "Economic Growth and Business Cycles", in Cooley and Prescott eds., *Frontiers of Business Cycle Research*, Princeton University Press.

Greenwood, Jeremy, Zvi Hercowitz, and Per Krusell, 1997, "Long-Run Implications of Investment Specific Technological Change", *AER*, Vol. 87, Issue 3, 342-362.

Jones, Larry, and Rodolfo Manuelli, 1990, "A Convex Model of Equilibrium Growth: Theory and Policy Implications", *Journal of Political Economy*, vol. 98, no. 5, 1008-38.

Prescott, Edward, 1986, "Theory Ahead of Business Cycle Measurement", Federal reserve Bank of Minneapolis *QR* 10: 9-22.

Romer, Paul, 1987, "Growth Based on Increasing Returns Due to Specialization", *AER* 77.2: 56-62.

Summers, Lawrence, 1986, "Some Skeptical Observations on Real Business Cycle Theory", Federal Reserve Bank of Minneapolis *QR*.

These papers are all available on line (Jstor or personal webpages).

Monetary Economics (June)

Cooley, Thomas F., and Gary D. Hansen, 1995, "Money and the Business Cycle", in Cooley and Prescott eds., *Frontiers of Business Cycle Research*, Princeton University Press.

Lucas, Robert E. and Nancy L. Stokey, 1983, "Optimal Fiscal and Monetary Policy in an Economy Without Capital", *Journal of Monetary Economics 12,* 55-93.

Course Outline

1. Infinite horizon model with no uncertainty and fixed labor

   (a) Efficient Allocations (April 24-26)

      i. Sequence Approach (LS pp 8-13, sec.4.5)

      ii. Dynamic Programming (LS pp13-16, sec 4.2, sec.6.1)

   (b) Equilibrium Concepts (LS sec 2.3, Cooley-Prescott 1995 pp 8-10, my handout)

      i. Sequence concepts

         A. Date 0 Arrow-Debreu

         B. Sequence-of-Markets

      ii. Recursive Competitive Equilibrium

   (c) Application: Growth Theory (April 29-30, May 2)

      i. Exogenous Growth Models (LS sec 5.4, Ljungqvist-Sargent Ch. 11, Greenwood, Hercowitz and Krusell 1997)

      ii. Endogenous Growth Models (Ljungqvist-Sargent Ch. 11)

         A. Convex Models of Sustained Growth (Rebelo 1991, Jones and Manuelli 1990)

         B. Sustained Growth with Non-Convexities
            - Increasing variety and specialization (Romer 1987)

         C. Sustained Growth with Reproduceable Factors
            - Learning-by-doing and learning-or-doing (LS sec 5.7)

2. Adding uncertainty and variable labor: The RBC model (May 2-3)

   (a) Facts and RBC Theory (Cooley and Prescott 1985, Prescott 1986, Summers 1986)

   (b) RBC model with externalities in production (Christiano and Harrison 1998)

   (c) RBC model with imperfect competition (Farmer 1993, sec 7.2, *if we have time*)

3. Monetary Models (Ljungqvist and Sargent chap. 17, 18, my handout)

   (a) Cash-in-advance models, Money-in-the-utility function models, Transaction costs models

   (b) Models with frictions

      i. Limited Participation Models

      ii. Models with Nominal Rigidities

   (c) Optimal Monetary and Fiscal Policy (Lucas and Stokey 1983)

Additional Suggested Readings

Farmer, Roger E., 1993, *The Macroeconomics of Self-Fulfilling Prophecies*, MIT Press.

Grossman, Gene M., and Elhanan Helpman, 1990, "Trade, Innovation and Growth", *AER*, Vol. 80, Issue 2, 86-91.

Jones, Larry, and Rodolfo Manuelli, 1997, "The Sources of Growth", *Journal of Economic Dynamics and Control*, vol. 21, no. 1.

Kydland, Finn E., and Edward C., 1982, "Time-to-Build and Aggregate Fluctuations", *Econometrica*, Vol. 50, Issue 6, 1345-70.

Lucas, Robert E., 1988, "On the Mechanichs of Economic Development", *Journal of Monetary Economics* 22, 3-42.

Lucas, Robert E., 1990, "Why doesn't Capital Flow from Rich to Poor Countries?", *AER*, Vol. 80, Issue 2, 92-96.

Rebelo, Sergio, 1991, "Long-Run Policy Analysis and Long Run Growth", *Journal of Political Economy* 99.3: 500-521.

Romer, Paul, 1990, "Are Non-Convexities Important for Understanding Growth?", *AER*, Vol. 80, Issue 2, 97-103.

Growth Theory- Detailed Outline

1. Exogenous engines of growth, 29/4
   (a) Hicks-Neutral Exogenous Growth
      i. Balanced Growth Paths
      ii. Preferences and Technology consistent with Balanced Growth
   (b) Growth through embodied technological improvement (Greenwood, Hercowitz, Krusell 1997)
      i. Some facts about US Growth
      ii. A model
2. AK growth, 30/4, 12.30-13.30
   (a) Feasibility and desirability of growth
   (b) Lack of transition dynamics
   (c) Linearity of policy rule
3. Growth through increasing differentiation, 30/4, 14.00-17.00
4. Human Capital Accumulation 2/5, 12.30-13.30, 14.00-15.30
   (a) Learning-by-doing
   (b) Learning-or-doing