Economics 411-3 Luigi Bocola and Matthias Doepke
Macroeconomics Spring 2017

Syllabus

Course Organization

The class meets on Tuesdays and Thursdays from 1:00 p.m. to 2:30 p.m. in KGH 1410. A discussion section will meet in the same room Fridays 11:00 a.m. to 12:50 p.m. The course grade will be based on three components: problem sets (30%), a midterm exam (30%), and a final exam (40%). The midterm takes place on April 27th (Thursday) in class. The final takes place Wednesday, Jun 7, from noon to 2 p.m.

Problem sets can be done in groups of two, and only one answer needs to be handed in for each group. All answers should be typeset using LaTeX.

Contact Information

The easiest way to get in contact with us is via e-mail:

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Our office hours are by appointment or walk-in if the door is open. A web site for this course will be maintained on Canvas.

The teaching assistant for the class is Ana Danieli:

`AnaDanieli2020@u.northwestern.edu`

Ana's office hours are from 4:30 to 6:30 p.m. on Thursdays.

Textbooks

The main textbook for the class is Ljungquist and Sargent (LS). We will also draw to some extent on Stokey-Lucas Prescott (SP), and additional readings will be made available on the course web site.

Lars Ljungquist and Thomas J. Sargent (2004), *Recursive Macroeconomic Theory*, 2nd edition, MIT Press.

Nancy L. Stokey and Robert E. Lucas (1989), *Recursive Methods in Economic Dynamics*, Harvard University Press.

Programming and Computation

The course includes a significant component of programming and computation using FORTRAN. Each assignment will have a computational component, and material about computational techniques may also be asked about in midterm exams, final exams, or qualifying examinations. This does not mean that you have to write code in exams, but, for example, I may ask about algorithms and advantages and disadvantages of alternative computational approaches.

Since prior knowledge about programming and numerics is likely to vary widely among students, the problem sets can be done in groups of two people. Each group needs to hand in only one answer.

It is permissible (and to some extent encouraged) to discuss problems with the assignments with other students and to give each other help. It is not permissible, however, to directly copy code from another group.

For the computational part of the course, we will use the following manuscript:

Hans Fehr and Fabian Kindermann (2015), *Introduction to Computational Economics using FORTRAN*.

This manuscript is available as a PDF on the course home page on Canvas. Please note that this is an unpublished manuscript that we use with special permission from the authors, but that should not be circulated. Please do not share the manuscript with anyone outside the course and do not post the PDF to any public web site.

A web page accompanying the book can be found here:

`http://www.ce-fortran.com/`

At the web page you will also find links for free FORTRAN compilers with installation instructions for Windows, Mac, and Linux. The web page also includes many sample FORTRAN programs that you can use as starting points for your own programs (the first assignments in particular can be done by making minor modifications to sample programs.)

Preliminary List of Course Topics

1. Heterogeneity in the standard model: insurance and consumption under complete markets and full information.
    - LS, chapter 8.
2. Models with exogenously incomplete markets.
    - LS, chapter 16, 17.

- Dirk Krueger's manuscript on "Consumption and Saving: Theory and Evidence," chapters 1–4.
- Aiyagari, Rao (1994): "Uninsured Idiosyncratic Risk and Aggregate Saving," *Quarterly Journal of Economics* 109(3), 659–684.
- Aiyagari, Rao (1995): "Optimal Capital Income Taxation with Incomplete Markets and Borrowing Constraints," *Journal of Political Economy* 103(6), 1158–1175.
- Krusell, Per and Tony Smith (1998): "Income and Wealth Heterogeneity in the Macroeconomy," *Journal of Political Economy* 106(5), 867–896.

3. Endogenous market incompleteness: Bankruptcy and participation constraints.

   - LS, 19.1–19.4, chapter 20.
   - Dirk Krueger's manuscript on "Consumption and Saving: Theory and Evidence," chapter 6.
   - Alvarez, Fernando and Urban Jermann (2000): "Efficiency, Equilibrium, and Asset Pricing with Risk of Default," *Econometrica* 68(4), 775–797.
   - Krueger, Dirk and Fabrizio Perri (2005): "Does Income Inequality Lead to Consumption Inequality? Evidence and Theory," *Review of Economic Studies* 73(1), 163–193.

4. Covariance-stationary stochastic processes.

   - Hamilton, James D. (1994), *Time Series Analysis*, Princeton University Press, Chapters 1-3, 10-11

5. The time series implications of linear Dynamic Stochastic General Equilibrium (DSGE) models.

   - Heer, Burkhard and Alfred Maussner, *Dynamic General Equilibrium Modeling*, Springer, Chapter 2
   - Campbell, John Y. (1994), "Inspecting the mechanism- An analytical approach to the stochastic growth model", *Journal of Monetary Economics* 33, 463-506.
   - Durbin, James and Siem J. Koopman (2000), *Time Series Analysis by State Space Methods*, Oxford University Press, Chapter 3-4
   - Fernandez-Villaverde, Jesus, Juan Rubio-Ramirez, Thomas Sargent and Mark Watson (2007): "ABCs (and Ds) of Understanding VARs", *American Economic Review* 97(3), 1021–1026.

6. Structural Vector Autoregressions and DSGE models: some applications.

   - Gali, Jordi (1999): "Technology, Employment, and the Business Cycle: Do Technology Shocks Explain Aggregate Fluctuations?", *American Economic Review* 89(1), 249–271.

- Chari, V. V., and Patrick J. Kehoe, and Ellen R. McGrattan (2007): "Are Structural VARs with Long-Run Restrictions Useful in Developing Business Cycle Theory?", *Journal of Monetary Economics* 55(8), 1337-1352.
- Christiano, Lawrence J., and Martin Eichenbaum, and Robert Vigfusson (2007): "Assessing Structural VARs", *NBER Macroeconomics Annual* 21, 1-104.
- Leeper, Eric, and Todd B. Walker, and Shu-Chyn Susan Yang (2013): "Fiscal Foresight and Information Flows", *Econometrica* 81(3), 1115-1145.
- Schmitt-Grohe', Stephanie and Martin Uribe (2012): "What's News in Business Cycles", *Econometrica* 80(6), 2733-2764.