Syllabus for HECER Macroeconomics, Module 3, Spring 2018

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Overview

The module starts by introducing students to business cycle facts and methods. It then presents the main theoretical concepts and methods for solving and calibrating stochastic dynamic general equilibrium models (DSGE), starting with the basic real business cycle model (RBC). Further topics include the extension to the open economy as well as the analysis of financial frictions and asset pricing. The course will mainly draw elements from the following books:

- David **DeJong and** Chetan **Dave** (2011): "Structural Macroeconometrics", 2nd ed. Princeton University Press
- Thomas **Cooley**, ed. (1995): "Frontiers of Business Cycle Research", Princeton University Press
- Michael **Wickens** (2011): "Macroeconomic Theory", 2nd ed.
- George **McCandless** (2008): "The ABCs of RBCs. An Introduction to Dynamic Macroeconomic Models" Harvard University Press
- Stephanie **Schmitt-Grohe and** Martin **Uribe** (2017): "Open Economy Macroeconomics"

Other noteworthy books

Open Economy Texts:
- Maurice Obstfeld and Kenneth Rogoff (1996): "Foundations of International Macroeconomics", MIT Press (+ solution manual by Gopinath, Obstfeld and Rogoff)
- Carlos Vegh (2013): "Open Economy Macroeconomics in Developing Countries.", MIT Press
- Nelson Mark (2001): "International Macroeconomics and Finance", Wiley-Blackwell
- G. Lim and Paul McNelis (2008): "Computational Macroeconomics for the Open Economy", MIT Press

Recursive methods and old-time classics:
- David Romer (2011): "Advanced Macroeconomics", 4th ed., McGraw Hill (+ solution manual by Rohaly)
- Thomas Sargent and Lars Ljungqvist (2012), "Recursive Macroeconomic Theory", 3rd ed., MIT Press
- Robert Lucas and Nancy Stokey with Edward Prescott (1989): "Recursive Methods in Economic Dynamics", Harvard University Press (+ solution manual by Irygoyen, Rossi-Hansberg and Wright)
- Thomas Sargent (1987): "Macroeconomic Theory", 2nd ed. Emerald Group Publishing
- Thomas Sargent (1987): "Dynamic Macroeconomic Theory", 5th ed. Harvard University Press (+ solution manual by Manuelli)
- Lars Hansen and Thomas Sargent (2014): "Recursive Models of Dynamic Linear Economies", Princeton University Press
- Oliver Blanchard and Stanley Fischer (1989): "Lectures on Macroeonomics", MIT Press

- Brukhard Heer and Alfred Mausner (2009): "Dynamic General Equilibrium Modeling", 2nd. Ed. Springer Verlag
- Jerome Adda and Russell Cooper (2003): "Dynamic Economics", MIT Press

Macroeconometrics and empirical methods:
- James Hamilton (1994): "Time Series Analysis", Princeton University Press
- Helmut Lutkepohl (2005): "New Introduction to Multiple Time Series Analysis", Springer Verlag
- Fabio Canova (2007): "Methods for Applied Macroeconomic Research", Princeton University Press
- Carlo Favero (2001): "Applied Macroeconometrics", Oxford University Press
- Lutz Kilian and Helmut Lutkepohl (2018): "Structural Vector Autoregressive Analysis" (manuscript available at http://www-personal.umich.edu/~lkilian/book.html)

Outline

1. *Introduction to business cycle fluctuations: empirical regularities and techniques*

- DeJong and Dave (2011), Ch.6
- Cooley (1995), Ch.1
- King, R. and S. Rebelo (1999), "Resuscitating Real Business Cycles." In J. Taylor and M. Woodford (eds.), *Handbook of Macroeconomics*, Chapter 14, Volume 1B. Amsterdam; New York and Oxford: Elsevier Science, North-Holland, 927-1007

2. *Stochastic growth model*

- *Wickens (2011), Ch.2.1-2.5 and 3.1-3.4*

3. *Basic steps to analyse dynamic stochastic general equilibrium macro-models. Application of these techniques to simple real business cycle models*

- McCandless, Chapters 1, 3-7 (main emphasis on Chapters 5 and 6)
- Harald Uhlig's "A Toolkit for Analyzing Nonlinear Dynamic Stochastic Models Easily". Available at http://www.sfu.ca/~kkasa/uhlig1.pdf
- Hansen, G. D. (1985), "Indivisible Labor and the Business Cycle." *Journal of Monetary Economics* Vol. 16, 309-327.

4. *Extensions to the basic real business cycle model: investment adjustment costs*, *variable capacity utilization, habit persistence in consumption. Asset pricing and the equity premium puzzle.*

- King, R. and S. Rebelo (1999), "Resuscitating Real Business Cycles." In J. Taylor and M. Woodford (eds.), *Handbook of Macroeconomics*, Chapter 14, Volume 1B. Amsterdam; New York and Oxford: Elsevier Science, North-Holland, 927-1007.
- Wickens, M. (2011), Chapter 11 (Asset Pricing and Macroeconomics)
- Mehra (2003): Equity premium: Why is it a puzzle? NBER Working Paper 9512
- Constantinides, G. M. (1990), "Habit Formation: A Resolution of the Equity Premium Puzzle." *Journal of Political Economy* 98, 519-543.
- Jermann, U. (1998), "Asset pricing in production economies." *Journal of Monetary Economics* Vol 41, 257-275.

5. *Financial frictions*

- Bernanke , B. and Gertler (1989), "Agency costs, net worth and business fluctuations". *American Economic Review* Vol. 79, 14-31.
- Carlstrom, C. and Fuerst, T. (1997), "Agency costs, net worth and business fluctuations: A computable general equilibrium analysis." *American Economic Review* Vol. 87, 893-910.

6. *Open economy models*

- McCandless, Chapter 13 (excluding section 13.4)
- Schmitt-Grohe, Stephanie and Martín Uribe (2003), "Closing Small Open models" *Journal of International Economics* Vol. 61, 163-185 (also NBER Working paper 9270)

Modern quantitative macroeconomics relies on computation since analytical solutions may be provided rarely. The assignments contain both analytical and computational exercises. We recommend using Dynare that is a Matlab library to solve standard dynamic models using perturbation methods. Octave is an open source Matlab 'clone' and provides useful alternative if you do not have Matlab. Follow the Dynare (http://www.dynare.org) instructions (http://www.dynare.org/DynareWiki/DynareOctave) to install Dynare with Octave.

Homeworks and exam

There will be 3 homework assignments throughout the class, each with equal weight. Overall, the student needs to obtain at least 40% of total points from the homeworks to be admitted to the final exam. The final score from the course is based solely on the exam. The final score from the homework does not affect the final grade in other ways.