

## BUSINESS CYCLES

Class Meets: Tu, Th 11:00am-12:20pm, Econ 200

Grading:

Homework = 10% (check  $\pm$ )

Midterm = 45%

Final = 45%

Exam Dates:

Midterm 5/1 (in class)

Final 6/7 (in class)

## SYLLABUS

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Main textbooks:

David Romer, 2011. *Advanced Macroeconomics*. 4<sup>th</sup> edition. McGraw-Gill.

Jordi Gali, 2008. *Monetary Policy, Inflation, and the Business Cycle: An Introduction to the New Keynesian Framework*. Princeton University Press.

Recommended textbooks:

Carl Walsh, 2010. *Monetary Theory and Policy*. MIT Press.

Olivier Blanchard and Stanley Fischer. 1989. *Lectures on Macroeconomics*. MIT Press.

Michael Woodford, 2003. *Interest and Prices*. Princeton University Press.

# COURSE OUTLINE

Starred papers are required readings.

## Overview

- \*Romer, sections 5.1.
- Walsh, Chapter 1.
- \*Robert Lucas, 1977. "Understanding Business Cycles," *Carnegie-Rochester Conference Series on Public Policy* 5: 7-29.
- \*N Gregory Mankiw, 2006. "The Macroeconomist as Scientist and Engineer." *Journal of Economic Perspectives*, 20(4): 29-46.
- \*James Stock and Mark Watson, 1999. "Business Cycle Fluctuations in U.S. Macroeconomic Time Series," *Handbook of Macroeconomics*, Chapter 1.
- Robert Barsky and Jeffrey Miron, 1989. "The Seasonal Cycle and the Business Cycle," *Journal of Political Economy* 97 (3): 503-534.
- Milton Friedman and Anna Schwartz, *A Monetary History of the United States, 1867-1960*. Princeton University Press, 1963. (Especially ch. 7).
- James Stock and Mark Watson, 2002. "Has the business cycle changed and why?" *NBER Macroeconomics Annual* 2002, p 159
- Robert E. Lucas Jr, "Econometric policy evaluation: A critique," *Carnegie-Rochester Conference Series on Public Policy*, Volume 1, 1976, Pages 19-46

## Competitive Equilibrium Business-Cycle Models

### A. Overview, Basic Issues, Log-Linearization

- \*Romer 5.2-5.7.
- \*Harold Uhlig, "A Toolkit for Analyzing Nonlinear Dynamic Stochastic Models Easily," in Marimon and Scott (eds.), *Computational Methods for the Study of Dynamic Economies*. Available at <http://www.wiwi.hu-berlin.de/wpol/html/toolkit/toolkit.pdf>
- \*Miles Kimball, 2004. *Real Business Cycle Theory: A Semiparametric Approach*, Chapter 10. Available at <http://www.umich.edu/~mkimball/Econ611/book-ec611-2004.pdf>
- Obstfeld and Rogoff, 7.4 (esp. 7.4.3).
- Olivier Blanchard and Charles Kahn, 1980. "The Solution of Linear Difference Models under Rational Expectations," *Econometrica* 48(5): 1305-1311.

### B. Complete Models and Calibration

- \*Romer, 5.8.
- \*Robert King, Charles Plosser and Sergio Rebelo, 1988. "Production, Growth and Business Cycles: I. The Basic Neoclassical Model," *Journal of Monetary Economics* 21 (2-3): 195-232.
- Robert King and Sergio Rebelo, 1999. "Resuscitating Real Business Cycles," *Handbook of Macroeconomics*, Chapter 14.
- Thomas Cooley and Edward Prescott, 1995. "Economic Growth and Business Cycles," in Cooley, ed., *Frontiers of Business Cycle Research* (Princeton: Princeton University Press), Chapter 1.

### C. Discussion and Evaluation

- \*Romer, 5.10.
- \*Timothy Cogley and James Nason, 1995. "Output Dynamics in Real-Business-Cycle Models," *American Economic Review* 85(3): 492-511.
- \*Julio Rotemberg and Michael Woodford, 1996. "Real-Business-Cycle Models and the Forecastable Movements in Output, Hours, and Consumption," *American Economic Review* 86(1): 71-89.
- Larry Summers, 1986. "Some Skeptical Observations on Real Business Cycle Theory." Federal Reserve Bank of Minneapolis Quarterly Review, Fall 1986.
- Edward Prescott, 1986. "Response to a Skeptic" Federal Reserve Bank of Minneapolis Quarterly Review, Fall 1986.
- Sergio Rebelo, 2005. "Real Business Cycle Models: Past, Present and Future," *Scandinavian Journal of Economics* 107(2): 217-238.
- Charles Plosser, 1989. "Understanding Real Business Cycles," *Journal of Economic Perspectives* 3(3): 51-77.
- N. Gregory Mankiw, 1989. "Real Business Cycles: A New Keynesian Perspective," *Journal of Economic Perspectives* 3(3): 79-90.

### D. Variable Factor Utilization

- \*Jeremy Greenwood, Zvi Hercowitz and Gregory W. Huffman, 1988. "Investment, Capacity Utilization, and the Real Business Cycle," *American Economic Review* 78(3): 402-417.
- Craig Burnside and Martin Eichenbaum, 1996. "Factor-hoarding and the Propagation of Business-cycle Shocks," *American Economic Review* 86(5):1154 -1174.

### E. RBC Models with Non-Neoclassical Features (time-permitting)

- \*Julio Rotemberg and Michael Woodford, 1995. "Dynamic General Equilibrium Models with Imperfectly Competitive Product Markets," in Cooley, ed., *Frontiers of Business Cycle Research*, Chapter 9. (Also available as NBER WP 4502).
- \*Susanto Basu and John Fernald, 1997. "Returns to Scale in U.S. Production: Estimates and Implications," *Journal of Political Economy* 105(2): 249-283.
- Marianne Baxter and Robert King, 1991. "Productive Externalities and the Business Cycle," unpublished manuscript. Available at <http://www.minneapolisfed.org/research/DP/DP53.pdf>

## **Monetary Business Cycles**

### A. Staggered Price Setting

- \*Romer, Chapters 6 and 7.
- \*Gali, Chapters 2 and 3.
- Woodford, Sections 3.1 and 3.2.
- Walsh, Chapters 6 and 8.
- \*Larry Ball and David Romer, 1990. "Real Rigidities and the Non-Neutrality of Money." *Review of Economic Studies* 57 (2): 183-203.
- \*Peter J. Klenow and Benjamin A. Malin, "Chapter 6 - Microeconomic Evidence on Price-Setting" in: Benjamin M. Friedman and Michael Woodford, Editor(s), *Handbook of Monetary Economics*, Elsevier, 2010, Volume 3, Pages 231-284.

- Miles Kimball, 1995. "The Quantitative Analytics of the Basic Neomonetarist Model," *Journal of Money, Credit and Banking* 27(4): 1241-1277.
- V.V. Chari, Pat Kehoe and Ellen McGrattan, 2000. "Sticky-Price Models of the Business Cycle: Can the Contract Multiplier Solve the Persistence Problem?" *Econometrica* 68(5): 1151-1179.

#### B. Optimal policy

- \*Romer, Chapter 11.
- \*Gali, Chapter 4.
- Woodford, Sections 4.2, 6.1-6.2.
- Walsh, Chapters 8.4 and 11.
- \*Richard Clarida, Jordi Galí, and Mark Gertler, 2000. "Monetary policy rules and macroeconomic stability: evidence and some theory," *Quarterly Journal of Economics* 115, (1), 147-180.
- Richard Clarida, Jordi Galí, and Mark Gertler, 1999. "The Science of Monetary Policy: A New Keynesian Perspective." *Journal of Economic Literature* 37 (4): 1661-1707.
- Marvyn King, 2005. "What Has Inflation Targeting Achieved?" in *The Inflation-Targeting Debate*, Ben Bernanke and Michael Woodford, eds., University of Chicago Press.
- Lars E.O. Svensson, 2010. "Chapter 22 - Inflation Targeting," in: Benjamin M. Friedman and Michael Woodford, Editor(s), *Handbook of Monetary Economics*, Elsevier, 2010, Volume 3, Pages 1237-1302.
- Laurence Ball, 2010. "Chapter 23 - The Performance of Alternative Monetary Regimes," in: Benjamin M. Friedman and Michael Woodford, Editor(s), *Handbook of Monetary Economics*, Elsevier, 2010, Volume 3, Pages 1303-1343.

#### **Credit Cycles (not covered this year)**

- Ben Bernanke, Mark Gertler, and Simon Gilchrist, 1999. "The financial accelerator in a quantitative business cycle framework," *Handbook of Macroeconomics*, Chapter 21.
- Nobuhiro Kiyotaki and John Moore, 1997. "Credit cycles," *Journal of Political Economy* 105:211-248.
- Mark Gertler and Nobuhiro Kiyotaki, 2010. "Chapter 11 - Financial Intermediation and Credit Policy in Business Cycle Analysis," in: Benjamin M. Friedman and Michael Woodford, Editor(s), *Handbook of Monetary Economics*, Elsevier, 2010, Volume 3, Pages 547-599.
- Anil Kashyap and Jeremy Stein, 2000. "What Do A Million Observations on Banks Have To Say About the Monetary Transmission Mechanism?" *American Economic Review* 90(3): 407-428.

#### **Heterogeneous Agent Models (time-permitting)**

- \*Krusell, Per, and Anthony A. Smith, Jr. "Income and wealth heterogeneity in the macroeconomy." *Journal of political Economy* 106.5 (1998): 867-896.
- \*Veronica Guerrieri, Guido Lorenzoni. "Credit Crises, Precautionary Savings, and the Liquidity Trap," *The Quarterly Journal of Economics*, Volume 132, Issue 3, 1 August 2017, Pages 1427–1467.
- \*Guvenen, Fatih, Serdar Ozkan, and Jae Song. "The nature of countercyclical income risk." *Journal of Political Economy* 122.3 (2014): 621-660.
- Aiyagari, S. Rao. "Uninsured idiosyncratic risk and aggregate saving." *The Quarterly Journal of Economics* 109.3 (1994): 659-684.

- Werning, Iván. *Incomplete markets and aggregate demand*. No. w21448. National Bureau of Economic Research, 2015.
- Khan, Aubhik, and Julia K. Thomas. "Idiosyncratic shocks and the role of nonconvexities in plant and aggregate investment dynamics." *Econometrica* 76.2 (2008): 395-436.

## **Conditional model evaluation**

### A. Monetary Shocks

Woodford Section 3.2-3.3 and Chapter 5

- \*Christina Romer and David Romer, 2004. "A new measure of monetary shocks: Derivation and implications," *American Economic Review* 94 (4): 1055-1084.
- \*Valerie Ramey (2016), "Macroeconomic Shocks and Their Propagation," forthcoming in *Handbook of Macroeconomics* Vol. 2.
- Larry Christiano, Martin Eichenbaum, and Charles Evans, 2005. "Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy," *Journal of Political Economy* 113 (1): 1-45.

### B. Technology and oil price shocks

- \*Jordi Gali, 1999. "Technology, Employment, and the Business Cycle: Do Technology Shocks Explain Aggregate Fluctuations?" *American Economic Review* 89: 249-271.
- \*Susanto Basu, John Fernald, and Miles Kimball, 2006. "Are Technology Improvements Contractionary?" *American Economic Review* 96 (5): 1418-1448.
- Paul Beaudry and Franck Portier, 2006. "Stock Prices, News, and Economic Fluctuations," *American Economic Review* 96 (4): 1293-1307.
- Neville Francis and Valerie A. Ramey, 2005. "Is the technology-driven real business cycle hypothesis dead? Shocks and aggregate fluctuations revisited," *Journal of Monetary Economics*, Volume 52, Issue 8, Pages 1379-1399.
- Jeremy Greenwood; Zvi Hercowitz; Per Krusell, 1997. "Long-Run Implications of Investment-Specific Technological Change," *American Economic Review* 87: 342-362.
- Kilian, Lutz 2008. "The Economic Effects of Energy Price Shocks." *Journal of Economic Literature* 46(4): 871-909.
- Baumeister, Christiane, and James D. Hamilton. "Structural interpretation of vector autoregressions with incomplete identification: Revisiting the role of oil supply and demand shocks." *Manuscript, University of Notre Dame and UCSD* (2015).

### C. Fiscal shocks

- \*Romer, Sections 11.1-11.3
- \*Valerie Ramey and Matthew Shapiro, 1998. "Costly Capital Reallocation and the Effects of Government Spending," *Carnegie-Rochester Conference Series on Public Policy* 48, 145-194.
- \*Christina Romer and David Romer, 2010. "The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks," *American Economic Review* 100(3): 763-801.
- Auerbach, Alan J., and Yuriy Gorodnichenko. 2012. "Measuring the Output Responses to Fiscal Policy." *American Economic Journal: Economic Policy*, 4 (2): 1-27.

- Olivier Blanchard and Roberto Perotti, 2002. "An empirical characterization of the dynamic effects of changes in government spending and taxes on output," *Quarterly Journal of Economics* 117 (4): 1329-1368.
- Christopher House and Matthew Shapiro, 2006. "Phased-in tax cuts and economic activity," *American Economic Review* 96(3): 1835-1849.
- Mertens, Karel, and Morten O. Ravn. "The dynamic effects of personal and corporate income tax changes in the United States." *The American Economic Review* 103.4 (2013): 1212-1247.
- Parker, Jonathan A. 2011. "On Measuring the Effects of Fiscal Policy in Recessions." *Journal of Economic Literature*, 49(3): 703–718.
- Valerie Ramey, 2011. "Can Government Purchases Stimulate the Economy?" *Journal of Economic Literature* 49(3): 673–685.
- Valerie A. Ramey and Sarah Zubairy, "Government Spending Multipliers in Good Times and in Bad: Evidence from US Historical Data," *Journal of Political Economy*, forthcoming.