



**College of Business Administration**  
**Department of Economics**  
**Macro Theory**  
**Lecturer: O. Mikhail**  
**ECO 7205-0001**  
**Fall 2004**

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### Course Outline

Time : Tuesday 10:30 a.m. – 1:30 p.m.  
Location : BA 110.  
Office : BA2-302.  
Office Hours : Tuesday 2:00 p.m. – 3:00 p.m.  
Thursday 3:00 p.m. – 5:00 p.m.  
Web Page : <http://www.bus.ucf.edu/omikhail/Eco7206/F2004/Eco-7205-f2004.htm>  
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### **Objective:**

The goal of macroeconomics is twofold. First, it develops positive models to help us understand the dynamics of key macroeconomic variables, and second one uses these models to make judgments about what policies to pursue or not to pursue.

The objective of this class is to present the theory and the programming tools required to study Dynamic Stochastic General Equilibrium (DSGE) models and to apply these to topics in macroeconomics.

We start by presenting the stylized facts and the puzzles in macroeconomics, and then we investigate different types of models proposed to explain and to analyze these facts. Within a general equilibrium framework, we construct artificial economies using Real Business Cycle (RBC) models. The bulk of the class evolves around the theoretical construction, methods of solving and criticisms to RBC models. Finally, we examine the proposed models to answer questions of interests.

The class could be divided into two parts: Theory and Programming. In the theory part, we will address existence, continuity with respect to the parameters and properties of the solution to deterministic and stochastic dynamic programming. The programming part will mainly evolve around finding numerical solutions to dynamic programming.

By the end of the class, students are expected to understand, read, develop and solve stochastic dynamic general equilibrium models of the Macroeconomy and Finance.

Each student will be assigned a Linux account for computational purposes. The Fortran 77 compiler is available on the server **cleopatra.bus.ucf.edu**

### **Additional Programming Sessions**

Each week on Thursday from 10:30 a.m. to 11:30 a.m., we will meet at the McGruder lab to learn how to write and solve problems in Matlab and Fortran.

Regarding the reading list and historically, we were only able to get to parts of the Labor Market. Due to class-time limitations and depending on your absorption rate, the part of the value of money could not be covered (actually, we never did in past classes).

The reading list is to provide you with a quasi complete set of information needed to understand the materials presented in class. The class materials and the lecture notes are drawn from the reading list. You are responsible for everything covered in class.

### **General Pre-requisite**

- 1) An intermediate level of calculus, algebra and statistics.
- 2) A fair understanding of Logic and Proof (class notes will be supplied).
- 3) A programming language such as: GAUSS, FORTRAN or MATLAB (i.e., concepts such as statements, logical and loop type).

### **Evaluation**

- |   |      |
|---|------|
| • Assignments – Type I - (Weekly Summary) | 10 % |
| • Assignments – Type II                   | 15 % |
| • Mid-Term Exam                           | 25 % |
| • Final Exam                              | 50 % |

The Type I assignments are a one page weekly summary of one article from Hartley, Hoover and Salyer (1998).

### **Books**

- Azariadis, Costas. (1993) *Intertemporal Macroeconomics*. Blackwell Publishers, Cambridge, Massachusetts, ISBN: 1-55786-366-0.
- Barro, Robert J. (1989) *Modern Business Cycle Theory*. Harvard University Press. ISBN: 0-674-57860-0.
- **Black, Fischer. (1995) *Exploring General Equilibrium*. MIT Press, Cambridge, Massachusetts, ISBN: 0-262-02382-2.**
- Becker, Robert A. and John Harvey Boyd III. (1997) *Capital Theory, Equilibrium Analysis and Recursive Utility*. Blackwell Publishers, ISBN: 1-557-86413-6.
- Cooley, Thomas, F. (1995) *Frontiers of Business Cycle Research*. Princeton University Press, ISBN: 0-691-04323-X.

- Judd, Kenneth L. (1998) *Numerical Methods in Economics*. MIT Press, ISBN: 0-262-10071-1.
- **Hartley, James E., Kevin D. Hoover and Kevin D. Slayer (1998) *Real Business Cycles, A Reader*. Routledge. ISBN: 0-415-17154-7.**
- Hildenbrand, W. and A. P. Kirman. (1988) *Equilibrium Analysis*. North-Holland, ISBN: 0-444-70511-2.
- **Le Van, Cuong and Rose-Anne Dana (2003) *Dynamic Programming in Economics*. Kluwer Academic Publishers. ISBN: 1-4020-7409-3**
- **Marimon, Ramon and Andrew Scott (2001) *Computational Methods for the Study of Dynamic Economies*. Oxford University Press. ISBN: 0-19-924827-3**
- McCandless, George T. and Wallace, Neil. (1991) *Introduction to Dynamic Macroeconomic Theory: An Overlapping Generations Approach*. Harvard University Press, ISBN: 0-674-46111-8.
- Roger, Farmer E. (1993) *The Macroeconomics of Self-Fulfilling Prophecies*. MIT Press, Cambridge.
- Romer, David. (1996) *Advanced Macroeconomics*. McGraw-Hill, New York, ISBN: 0-07-053667-8.
- Snowdon, Brian and Vane, Howard. (1997) *A Macroeconomics Reader*. Routledge. ISBN: 0-415-15716-1.
- Sargent, Thomas J. (1987) *Dynamic Macroeconomics Theory*. Harvard University Press, Cambridge, ISBN: 0-674-21877-9.
- Stokey, Nancy L. and Robert E. Lucas with Edward C. Prescott (1989) *Recursive Methods in Economic Dynamics*. Harvard Press.
- **Ljungqvist, Lars and Thomas Sargent (2000) *Recursive Macroeconomic Theory*. The MIT Press. ISBN: 0262-19451-1 [New Version is in print, it should be available September 2004 (next month)]**

#### **OPTIONAL/ADDITIONAL for Finance Students**

- Branimarte, Paolo (2002) *Numerical Methods in Finance*. Wiley Series in Probability and Statistics, Wiley Inter-Science, John Wiley & Sons, Inc. ISBN: 0-471-39686-9

# READING LIST

## Introduction

Topics: Advanced Undergraduate Macroeconomics – Puzzles – Stylized Facts – Constructing Artificial Economies – Methodology and Types of Models – Aspects of General Equilibrium – Issues in General Equilibrium – Markov Chains – Critique.

### Online Macro Notes

- Craig Burnside (Virginia), [\*Macroeconomic Theory I\*](#)
- Jeremy Greenwood (Rochester), [\*Lecture Notes on Dynamic Competitive Analysis\*](#)
- Lars Peter Hansen (Chicago) / Thomas Sargent (NYU), [\*Recursive Models of Dynamic Linear Economies\*](#)
- Dirk Krueger (Stanford), [\*Macroeconomic Theory\*](#)
- Lars Ljungqvist (Stockholm School) / Thomas Sargent (NYU), [\*Recursive Macroeconomic Theory\*](#)
- Rody Manuelli (Wisconsin), [\*Notes on Discrete Time Economic Models: The Growth Model\*](#)

### Online Math Notes

- Richard Woodward (TAMU), [\*Dynamic Optimization \(Continuous and Discrete Optimization\)\*](#)
- Stefan Bilaniuk (Trent University, Canada), [\*A Problem Course in Mathematical Logic \(logic\)\*](#)
- Douglas Arnold (Penn State), [\*Functional Analysis\*](#)
- Lee Larson (University of Louisville), [\*Real Analysis Lecture Notes\*](#)
- Vitali Liskevich (Bristol), [\*Measure Theory and Functional Analysis\*](#)
- Thomas Ward (University of East Anglia), [\*Functional Analysis\*](#)
- Bert Wachsmuth (Seton Hall University), [\*Interactive Real Analysis\*](#)
- Kris Wysocki (Melbourne), [\*Metric Spaces\*](#)
- Aisling McCluskey (York University, CA) / Brian McMaster (York University, CA), [\*Topology Course Notes\*](#)
- Sidney Morris (Ballarat University, Australia), [\*Topology without Tears\*](#)
- Oleg Viro et al. (Uppsala University, Sweden), [\*Elementary Topology\*](#)
- Jonathan Levin (Stanford) / Antonio Rangel (Stanford), [\*Useful Math for Microeconomics\*](#)
- Efe Ok (NYU), [\*Real Analysis and Probability with Economic Applications\*](#)
- Martin Osborne (Toronto), [\*Mathematical Methods for Economic Theory\*](#)
- Tian Guoqiang (Texas A&M), [\*Mathematical Economics\*](#)
- Viatcheslav Vinogradov (Charles University, Czech Republic), [\*A Cook-Book of Mathematics\*](#)
- Pravin Varaiya (Berkeley), [\*Lecture Notes on Optimization\*](#)

### **Class Notes, Book Chapters, Articles**

- Barro, Robert. (2000) *Macroeconomics*. MIT Press, Third Edition, ISBN: 0-262-02436-5.
- Black, Fischer. (1995) Parts I, II and III.
- Diebold, F. and Rudebusch, G. “Measuring Business Cycles: A modern Perspective.” *Review of Economics and Statistics*, pp. 67-77.
- Eberwein, Curtis, J. (1996) Lecture Notes, Department of Economics, McGill University.
- Hendricks, Lutz. (2000) “General Notes – Math Review – Static Optimization – Introduction.” Lecture Notes.
- Kydland, Finn E. (1995) “Business Cycles and Aggregate Labor Market Fluctuations.” In *Frontiers of Business Cycle Research*, T. F. Cooley, ed. Princeton University Press.
- Lyasoff, Andrew. (2004) “Markov Chains—a Quick Introduction.” Class Notes. Boston University, Dept. of Mathematics.
- Lucas, Robert. (1976) “Understanding Business Cycles.” Carnegie- Rochester Series on Public Policy 6.
- Mankiw, N. G. (1990) “A Quick Refresher Course in Macroeconomics.” *Journal of Economic Literature* XXVIII: pp. 1645-1660.
- Romer, David. (1996) Chapter 1.
- Schlagenhaut, Don. (2003) Class Notes ECO 5207. Florida State University. [http://garnet.acns.fsu.edu/~dschlage/don\\_schlagenhaut.htm](http://garnet.acns.fsu.edu/~dschlage/don_schlagenhaut.htm)
- Smith, Gregory. (1999) Lecture Notes. Chapter 1, pp. 1-18.
- Sims, Christopher A. (1980) “Macroeconomics and Reality.” *Econometrica*, vol. 48, no. 1, pp. 1-48.
- Sims, Christopher A. (1995) “Macroeconomics and Methodology.” *Journal of Economic Perspectives*, vol. 10, pp. 105-120.
- Srinivasan, Naveen. (2004) Advanced Macro: A primer. Class Notes. Cardiff University & Liverpool research Group in Macro.
- Young, Eric R. (2004) Lectures in Dynamic General Equilibrium. Class Notes. University of Virginia.
- Waelti, Manuel (2002) Lecture Notes. University of Bern. <http://www.vwi.unibe.ch/staff/waelti/>

### **Development of Macroeconomics**

- Woodford, Michael. (1999) “Revolution and Evolution in Twentieth-Century Macroeconomics.” Working Paper, Princeton University.
- Akerlof, George A. (2002) “Behavioral Macroeconomics and Macroeconomic Behavior.” *American Economic Review*, pp. 411-433.

### **The Business Cycle**

- Romer, Christina D. (1999) “Changes in Business Cycles: Evidence and Explanations.” *National Bureau of Economic Research*, Working Paper 6948, <http://www.nber.org/papers/w6948>

- Zarnowitz, Victor. (1998) “Has the Business Cycle Been Abolished?” *National Bureau of Economic Research, Working Paper 6367*, <http://www.nber.org/papers/w6367>

### **Filtering and the quest to find the Business Cycle**

- Cogley and Nason (1995) *Journal of Economic Dynamics and Control*.
- Hodrick and Prescott (1997) *Journal of Money, Credit and Banking*.
- Harvey and Jaeger (1993) *Journal of Applied Econometrics*
- Pedersen, Torben mark (1999) “Spectral Analysis, Business Cycles, and Filtering of Economic Time Series. A Survey.” Working Paper, University of Copenhagen.

### **Discounted Utility and Expectations**

- Epstein, Larry G. and Allan Hynes (1983) “The Rate of Time Preference and Dynamic Economic Analysis.” *The Journal of Political Economy* 91, 611-635.
- Frederick, Shane., George Loewenstein and Ted O’Donoghue. (2002) Time Discounting and Time Preference: A Critical Review.” *Journal of Economic Literature*, vol. XL, no. 2, pp. 351-401.
- Carroll, Christopher D. (2001) “The Epidemiology of Macroeconomic Expectations.” *National Bureau of Economic Research, Working Paper 8695*, <http://www.nber.org/papers/w8695>
- Loewenstein, George and Drazen Prelec. (1992) “Anomalies in Intertemporal Choice: Evidence and an Interpretation.” *Quarterly Journal of Economics*, vol. 107, Issue 2, May, pp. 573-597.

## **Dynamic Stochastic GE models and Dynamic Programming**

Topics: Welfare Theorems – Real Business Cycle – Calibration versus Estimation.

- Azariadis, C. (1993) Chapters 1, 2, 4 and 6.
- Boileau, Martin. (2000) “A Child’s Guide to Dynamic Programming – Two Period Economies – Optimal Control Theory.” Lecture Notes.
- Campbell, J. (1994) “Inspecting the Mechanism: An Analytical Approach to the Stochastic Growth Model.” *Journal of Monetary Economics*, vol. 33, no. 3, pp. 463-506.
- Cooper, Russell. (2000) “Dynamic Programming: An Overview.” Lecture Notes.
- Farmer, Roger. (1993) Chapters 2 and 3.
- Hendricks, Lutz. (2000) “Dynamic Programming – Two and Three Period Models – Value Function and One-Sector Growth Model.” Lecture Notes.
- King, Ian P. (1987) “A Simple Introduction to Dynamic Programming in Macroeconomic Models.” Mimeo Queen’s University.
- King, Robert G. Plosser, Charles I. and Rebelo, Sergio T. (2000) “Resuscitating Real Business Cycles.” *Handbook of Macroeconomics*.
- King, Robert G. Plosser, Charles I. and Rebelo, Sergio T. (1988a) “Production, Growth and Business Cycles: I. The basic Neoclassical Model.” *Journal of Monetary Economics*, vol. 21, pp. 195-232.

- King, Robert G. Plosser, Charles I. and Rebelo, Sergio T. (1988b) “Production, Growth and Business Cycles: II. New Directions.” *Journal of Monetary Economics*, vol. 21, pp. 309-341.
- Kydland, F. and Prescott, E. (1982) “Time to Build and Aggregate Fluctuations.” *Econometrica*, vol. 50, pp. 1345-1370.
- Kydland, F. and Prescott, E. (1996) “The Computational Experiment: An Econometric Tool.” *Journal of Economic Perspectives*, vol. 10, no. 1, pp. 69-85.
- Long, John B. Jr. and Plosser, Charles I. (1983) “Real Business Cycles.” *Journal of Political Economy*, vol. 91, no. 1, pp. 39-69.
- Mankiw, N. G. (1989) “Real Business Cycle: a New Keynesian Perspective.” *Journal of Economic Perspective*, pp. 79-90.
- Mankiw, N. G. Rotemberg, J. and Summers, L. “Intertemporal Substitution in Macroeconomics.” *Quarterly Journal of Economics*, vol. 100, pp. 225-253.
- McCallum, Bennett T. (1989) “Real Business Cycle Models.” In Barro (1989).
- McGrattan, E. (1994) “A Progress Report on Business Cycle Models.” Federal Reserve Bank of Minneapolis, *Quarterly Review*, vol. 18, no. 4.
- Plosser, C. (1989) “Understanding real Business Cycles.” *Journal of Economic Perspectives*, vol. 3, pp. 51-77.
- Prescott, Edward. (1991) “Real Business Cycle Theories: What Have we Learned?” *Working Paper 486*, Federal Reserve of Minneapolis.
- Prescott, Edward. (1986) “Theory Ahead of Business Cycle Measurement.” *Minneapolis Quarterly Review*, pp. 9-22.
- Quah, Danny T. (1995) “Business Cycle Empirics: Calibration and Estimation.” *The Economic Journal*, vol. 105, pp. 1594-1596.
- Romer, Davis. (1996) Chapter 4.
- Sargent, Thomas. (1987) Chapter 1.
- Smith, Gregory. (1999) Lecture Notes. Chapter 2, pp. 19-85 and Chapter 4. pp. 124-226.
- Stadler, George W. (1994) “Real Business Cycles.” *Journal of Economic Literature*, vol. XXXII, December, pp. 1750-1783.
- Summers, Lawrence. (1986) “Some Skeptical Observations on Real Business Cycle Theory.” *Quarterly Review*, Federal Reserve Bank of Minneapolis.

## Solution Methods

### Online

- Ian King (Auckland), [A Simple Introduction to Dynamic Programming in Macroeconomic Models](#)
- Paul Klein (Penn), [Solving the Growth Model by Linearizing the Euler Equations](#)
- Harald Uhlig (Humboldt Universität Berlin), [A Toolkit for Analyzing Nonlinear Stochastic Models Easily](#)

## Articles

- Benitez-Silva, Hugio. George Hall, Gunter J. Hitsch, Giorgio Pauletto, John Rust (2000) “A Comparison of Discrete and Parametric Approximation Methods for Continuous-State Dynamic Programming Problems.” Yale University and University of Geneva.
- Christiano (1998) “Solving Dynamic Equilibrium Models by a Method of Undetermined Coefficients.” Working Paper 9804, Federal Reserve Bank of Cleveland.
- De La Fuente, A. (2000) *Mathematical Methods and Models for Economists*. Cambridge University Press, Chapters 12 and 13. “Discrete and Continuous Time Intertemporal Optimization.”
- Letendre, Marc-Andre (2001) “Estimating Parameters of RBC Models using GMM.” Lecture Notes. McMaster University.
- Ramon, Marimon and Scott, Andrews. (1999) “Computational Methods for the Study of Dynamic Economies.” Oxford University Press.
- Sims, Christopher. (2000) “Linearized Stochastic Modes.” Lecture Notes.
- Smith, Gregory. (1999) Lecture Notes. Chapter 3, pp. 86-123.
- Taylor, John B. and Uhlig, Harald. (1990) “Solving Nonlinear Stochastic Growth Models: A Comparison of Alternative Solution Methods.” *Journal of Business and Economic Statistics*, vol. 8, no. 1, pp. 1-17.
- Uhlig, Harald. (1997) “A Toolkit for Analyzing Nonlinear Dynamic Stochastic Models Easily.” Memo, CentER, University of Tilburg and CPER.

## Genetic Algorithms versus Evolutionary Programming

- Duffy, John and Paul D. McNelis (1997) “Approximating and Simulating the Stochastic Growth Model: Parameterized Expectations, Neural Networks, and the Genetic Algorithm.” University of Pittsburgh and Georgetown University.
- Gomme, Paul. (1996) “Evolutionary Programming as a Solution Technique for the Bellman Equation.” Mimeo, Simon Fraser University.

## Analytical versus Numerical: 101 for Beginners

- Uhlig, Taylor (2001) “A Toolkit for Analysing Nonlinear Dynamic Stochastic Models Easily.” in Ramon Marimon and Andrew Scott (2001) *Computational Methods for the Study of Dynamic Economies*. Oxford University Press, **footnote** 3, p. 30.

## Accuracy of the Numerical Solution?

- S. Boragan Aruoba, Jesus Fernandez-Villaverde, and Juan Francisco Rubio-Ramirez (2003) Comparing Solution Methods for Dynamic Equilibrium Economies. Working Paper 2003-27. Federal Reserve Bank of Atlanta.
- Den Hann, W. J. and Marcet, A. (1994) “Accuracy in Simulations.” *Review of Economic Studies*, vol. 61, pp. 3-17.
- Judd, Kenneth L. (1998) Numerical Dynamic Programming. Chapter 12.
- Santos, M.S. and J. Vigo. (1996) “Error Bounds for a Numerical Solution for Dynamic Economic Models.” *Applied Math. Lett.* Vol. 9, No. 4, pp. 41-45.

## Evaluating DSGE

- Bauwens, Luc. Lubrano, Michel. and Richard, Jean-Francois. (1999) *Bayesian Inference in Dynamic Econometric Models*. Advanced Texts in Econometrics, Ed. Granger. C.W.J. and Mizon, G.E. Oxford University Press; New York.
- DeJong, David N. Ingram, Beth F. and Whiteman, Charles H. (1997) “A Bayesian Approach to Dynamic Macroeconomics.” Manuscript.
- Landon-Lane, John. (1999) “Evaluating Real Business Cycle Models: The Data Transformation Problem.” *Working Paper*, School of Economics, The University of New South Wales, Sydney, Australia.
- Schorfheide, Frank. (2000) “Loss Function Based Evaluation of DSGE Models.” *Working Paper*, University of Pennsylvania, Department of Economics, June.
- Sims, Christopher. (2000) “Choosing Priors.” Lecture Notes.
- Sims, Christopher. (2000) “The Calibration Debate.” Lecture Notes.
- Watson, Marc. (1993) “Measures of Fit for Calibrated Models.” *Journal of Political Economy*, vol. 101, pp. 1011-1041.
- Zellner, Arnold. (1971) *An Introduction to Bayesian Inference in Econometrics*. John Wiley & Sons, Inc., New York.

## Consumption-Based Models and Finance

Topics: Economics versus Finance. Asset Prices. Asset Prices and Habit Formation. The Equity Premium Puzzle. Levels of asset returns versus volatility of returns (e.g., Bomfim and Reinhart (2000), Kuttner (1999), Roley and Sellon (1998), Thornton (1998), and Reinhart and Simin (1997)), Consumption Models.

### Online Macro-Finance

- Tyler Shumway (Michigan), [Introduction to Finance](#)
- Tyler Shumway (Michigan), [Introduction to Continuous-Time Asset Pricing](#)

### Articles

- Bomfim, Antulio N. (2000) “Pre-Announcement Effects, News, and Volatility: Monetary Policy and the Stock Market.” *Finance and Economics Discussion Series*, Division of Research, Statistics and Monetary Affairs, Federal Reserve Board, Washington, D.C.
- Buiter, William H. (2004) A Small Corner of Intertemporal Public Finance – New Developments in Monetary Economics: Two Ghosts, Two Eccentricities, A Fallacy, A Mirage and a Mythos. NBER Working Paper No. 10524.
- Carroll, C. (1997) “Death to the Log-Linearized Consumption Euler Equation.” *NBER Working Paper* #6298.
- Castanias, Richard P. II (1979) “Macroinformation and the Variability of Stock market Prices.” *Journal of Finance*, vol. 34, pp. 439-450.
- F. Cooley, ed. Princeton University Press. Chapter 10.
- Cooper, Russell. (2000) “Consumption and Investment.” Lecture Notes.

- Deaton, Angus. (1992) *Understanding Consumption*. Clarendon Lectures in Economics. Oxford University Press, ISBN: 0198288247.
- Fernandez-Villaverde, Jesus and Dirk Krueger (2002) “Consumption over the Life Cycle: Some Facts from Consumer Expenditure Survey Data.” NBER Working Paper No. 9382
- Grant, Simon and John Quiggin (2001) “The Equity Premium Puzzle: Explanations and Implications.” Australian National University, Working Paper No. 407.
- Hall, Robert. (1989) “Consumption.” In Barro (1989).
- Hall, Robert. (1978) “Stochastic Implications of the Life-Cycle Permanent Income Hypothesis: Theory and Evidence.” *Journal of Political Economy*, vol. 86, pp. 971-987.
- Kocherlakota, Narayana R. (1996) “The Equity Premium: It’s Still a Puzzle.” *Journal of Economic Literature*, vol. XXXIV, March, pp. 42-71.
- Mankiw, N. G. (1982) “Hall’s Consumption Hypothesis and Durable Goods.” *Journal of Monetary Economics*, vol. 10, pp. 417-425.
- Mehra, Rajnish (2001) “The Equity Premium Puzzle.” University of California, Santa Barbara and University of Chicago.
- Melino, Angelo and Alan X. yang (2004) “State Dependent Preferences Can Explain the Equity Premium Puzzle.” Working Paper. University of Toronto.
- Muellbauer, John and Lattimore, Ralph. (1995) “The Consumption function: A Theoretical and Empirical Overview.” *Handbook of Applied Econometrics: Macroeconomics*. Ed. Pesaran and Wickens, Blackwell publishers Ltd.
- Romer, David (1996) Chapters 7 and 8.
- Sargent, Thomas. (1987) Chapter 3.
- Weber, Christian E. “ Intertemporal non-separability and ‘rule of thumb’ Consumption.” *Journal of Monetary Economics*.

### **Empirical Saving**

- Peach, Richard and Charles Steindel. (2000) “A Nation of Spendthrifts? An Analysis of Trends in Personal and Gross Saving.” *Current Issues in Economics and Finance*, Federal Reserve Bank of New York, vol. 6, no. 10, September.

### **Asset Pricing**

- Breeden, D. T. (1986) “Consumption, Production, Inflation and Interest Rates: A Synthesis.” *Journal of Financial Economics*, vol. 16, pp. 3-39.
- Campbell, J. “Asset Pricing, Consumption and the Business Cycle.” *Handbook of Macroeconomics*, Chapter 19, Elsevier.
- Cochrane, John H. (2001) *Asset Pricing*. Princeton University Press, ISBN: 0691074984, Chapter 2.
- Cox, Ingersoll and Ross (1985) “An Intertemporal General Equilibrium Model of Asset Prices.” *Econometrica*, vol. 53, pp. 363-384.
- Jermann, Urban J. (1998) “Asset Pricing in production Economies.” *Journal of Monetary Economics*.
- Ljungqvist, Lars and Sargent, Thomas. (2000) *Recursive Macroeconomic Theory*. MIT Press, ISBN:0262194511, Chapters 7 and 10.

- Lucas, Robert E. Jr. (1978) “Asset Prices in an Exchange Economy.” *Econometrica*, vol. 46, no. 6, pp. 1429-1445.
- Lior Menzly, Lior. Tano Santos, and Pietro Veronesi (2002) “The Time Series of the Cross Section of Asset Prices.” NBER Working Paper No. 9217
- Rouwenhorst, Geert K. (1995) “Asset Pricing Implications of Equilibrium Business Cycle Models.” In *Frontiers of Business Cycle Research*.
- Walti, Manuel (2001) A Primer on Asset Pricing. Class Notes.

### **Asset Prices, Incomplete Markets**

- Guvenen, Fatih M. (2002) “Reconciling Conflicting Evidence on the Elasticity of Intertemporal Substitution: A Macroeconomic Perspective.” Working Paper. Department of Economics, University of Rochester.
- Qi Zeng (2002) “Stock Market and Consumer Debt.” Finance Department, The Wharton School University of Pennsylvania.

### **Asset prices and the Cost of Business Cycles**

- Alvarez, Fernando and Urban J. Jermann. (2000) “Using Asset Prices to Measure the Cost of Business Cycles.” *National Bureau of Economic Research, Working Paper 7978*, <http://www.nber.org/papers/w7978>

### **CAPM**

- Jagannathan, Ravi and Ellen R. McGrattan. (1995) “The CAPM Debate.” *Federal Reserve Bank of Minneapolis Quarterly Review*, vol. 19, no.4, Fall, pp. 2-17.

## **The Labor Market**

Topics: Real Business Cycle, the Labor Market, Government and Policy, Sectoral versus Aggregate Shocks.

- Aiyagari, R. Christiano, L. and Eichenbaum, Martin. (1992) “The Output, Employment and Interest Rate Effects of Government Consumption.” *Journal of Monetary Economics*, vol. 30, pp. 73-86.
- Barro, Robert J. (1990) “The Ricardian Approach to Budget Deficits.” *Journal of Economic Perspectives*, vol. 3, pp. 32-54.
- Benassi, Corrado. Chirco, Alessandra. and Colombo, Caterina. (1994) *The New Keynesian Economics*. Basil Blackwell, Inc. Oxford U.K., and Cambridge U.S.
- Burnside, Craig. Eichenbaum, Martin. and Fisher, J. “Assessing the Effects of a Fiscal Policy Shock.” Manuscript.
- Chari, V. V. Christiano, L. J. and Kehoe, P. J. (1995) “Policy Analysis in Business Cycle Models.” In *Frontiers of Business Cycle Research*, T. F. Cooley, ed. Princeton University Press.
- Christiano, L. and Eichenbaum, M. (1992) “Current real Business Cycle Theories and Aggregate labor Market Fluctuations.” *American Economic Review*, vol. 82, pp. 430-450.

- Hall, Robert E. (1998) “Labor-Market Frictions and Unemployment Fluctuations.” *National Bureau of Economic Research, Working Paper Series* no. 6501.
- Hansen, G. and Wright, R. (1992) “The Labor Market in Real Business Cycle Theory.” *Quarterly Review*, Federal Reserve Bank of Minneapolis, Spring.
- Lilien, David M. (1982) “Sectoral Shifts and Cyclical Unemployment.” *Journal of Political Economy*, vol. 90, no. 4, pp. 777-793.
- Ljungqvist, Lars and Sargent, Thomas. (2000) *Recursive Macroeconomic Theory*. MIT Press, ISBN:0262194511, Chapters 9 and 12.
- Long, John B. Jr. and Plosser, Charles I. (1987) “Sectoral versus Aggregate Shocks in the Business Cycle.” *American Economic Review: Papers and Proceedings*, vol. 77, pp. 333-336.
- Lucas, Robert E. (1976) “Econometric Policy Evaluation: A Critique.” Carnegie-Rochester Series on Public Policy.
- Millard, Stephen. Scott, Andrew and Sensier, Marianne. (1999) “Business Cycles and the Labour Market: Can the Theory Fit the Facts?” *Working Paper Series no. 93*, Bank of England.
- Mulligan, Casey B. (1999) Microfoundations and Macro Implications of Indivisible Labor.” NBER, Working Paper 7116, <http://www.nber.org/papers/w7116>
- Mulligan, Casey B. (2001) “Aggregate Implications of Indivisible Labor.” *Advances in Macroeconomics*. Vol. 1, issue 1, article 4.
- Romer, David (1996) Chapters 5, 6 and 10.
- Sims, Christopher. (2000) “Dynamic Fiscal Policy.” Lecture Notes.

### **Empirical Hours Worked**

- McGrattan, Ellen R. and Richard Rogerson. (1998) “Changes in Hours Worked Since 1950.” *Federal Reserve Bank of Minneapolis Quarterly Review*, vol. 22, no. 1, winter, pp. 2-19.

### **Is the model wrong or is it bad empirical measurements?**

- Abraham, Katherine G. (1995) “Real Wages and the Business Cycle.” *Journal of Economic Literature*, Vol. XXXIII, September, pp. 1215-1264.

### **Equilibrium Employment**

- Pissarides, Christopher A. (2000) *Equilibrium Unemployment Theory*. The MIT Press. ISBN: 0-262-16187-7
- Shimer, Robert (2002) *Equilibrium Unemployment Fluctuations*. Working paper. Princeton University. <http://www.princeton.edu/~Eshimer/wp/fluctuations.pdf>

## Value of Money

Topics: Real Business cycle and Money, Currency in the Utility Function, cash in Advance and OLG.

- Cooley, T. F. and Hansen, Gary D. (1995) “Money and the Business Cycle.” In *Frontiers of Business Cycle Research*, T. F. Cooley, ed. Princeton University Press.
- Cooper, Russell (2000) “Overlapping Generations Models.” Lecture Notes.
- Hendricks, Lutz. (2000) “Money in OLG Models – Cash in Advance Models.” Lecture Notes.
- McCandless, G. T. and Wallace, N. (1991) Chapters 1, 2, 3, 4, 5 and 6.
- Sargent, Thomas. (1987) Chapters 4, 5, 6 and 7.