Econ 210C: Macroeconomic Theory

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M-W, 11:00am-12:20pm, Econ 300

This course is divided into two parts. Both parts count equally (50%) towards the final grade. The grade will be determined by problems sets (10%) and by two in-class exams (90%). The exam on the first part will be on Wed. Apr 28^{th} , while the exam on the second part will be on Fri. Jun 11^{th} . The TA for this course is Myungkyu Shim (Econ 114, mkshim@ucsd.edu).

PART I: DYNAMIC GENERAL EQUILIBRIUM MACROECONOMICS Giacomo Rondina

In the first part of the course we begin by studying recursive methods and dynamic programming. We then analyze two powerful representations (extensive and recursive) of dynamic general equilibrium in macroeconomics. We will do this under the benchmark case of complete markets in an endowment economy and in a production economy. If time permits, we will study three applications: the term structure, the Modigliani-Miller theorem and the Ricardian equivalence.

I.A: RECURSIVE METHODS

1. Introduction

(a) Macroeconomic Theory and the Recursive Approach.

2. Mathematical Preliminaries (SL Ch. 3)

- (a) Complete Metric Spaces.
- (b) The Contraction Mapping Theorem and Blackwell's Sufficient Conditions.
- (c) The Theorem of the Maximum.

3. Dynamic Programming (SL Ch. 4 and Ch. 9)

- (a) Existence of a Value Function: the Principle of Optimality.
- (b) Characterization of a Value Function: Monotonicity, Concavity and Differentiability.
- (c) Euler Equations and Transversality Conditions in the Recursive Approach.

(d) Stochastic Dynamic Programming.

I.B: DYNAMIC GENERAL EQUILIBRIUM ANALYSIS

1. Competitive Equilibrium with Complete Markets (LS Ch. 8 and Ch. 12)

- (a) Time-0 Trading of Arrow-Debreu Securities.
- (b) Examples of Arrow-Debreu Economies.
- (c) Sequential Trading of Arrow Securities.
- (d) Recursive Competitive Equilibrium and Recursive Version of the Pareto Problem.
- (e) Application: Complete Markets and The Cost of Business Cycle [Lucas, 1987].
- (f) Competitive Equilibrium with Complete Markets in a Production Economy.

2. Applications (LS Ch. 10 and Ch. 13)

- (a) The Term Structure of the Interest Rate.
- (b) The Modigliani-Miller Theorem.
- (c) The Ricardian Equivalence in Partial and General Equilibrium.

References

We will make use of pieces of the following textbooks:

(LS) Ljungqvist and Sargent, Recursive Macroeconomic Theory, 2nd edition, MIT press, 2004.

(SL) Stockey and Lucas (1989), *Recursive Methods in Economic Dynamics*, Harvard University Press, 1989. In addition, references about specific topics will be provided during the lectures.

PART II: MONETARY THEORY AND POLICY Davide Debortoli

The second part of the course provides an overview of the literature on monetary aspects of the business cycle, with a special emphasis on inflation dynamics and their implications for monetary policy. We will cover both the main theoretical models and some relevant empirical evidence. For each topic, I have suggested a chapter from three different books. You are supposed to read at least one of them. Other required readings are marked with an asterisk (*).

1. Introduction, Motivation and Evidence (1 lecture).

Long-Run and Short-Run Evidence on Money, Output and Prices. The Narrative Approach. The VAR approach. The Structural approach.

- Walsh2003, chapter 1.
- (*) Christiano, L., M. Eichenbaum, and Charles L. Evans (1998): "Monetary Policy Shocks: What Have We Learned and to What End?", in J.B. Taylor, and M. Woodford eds., *Handbook of Macroe*conomics, vol. 1A, 65-148.
- McCandless, George T. and W. Weber (1995): "Some Monetary Facts", Federal Reserve Bank of Minneapolis, *Quarterly Review*.
- Stock, J. and M. Watson (2000): "Business Cycle Fluctuations in U.S. Macroeconomic Time Series", in J.B. Taylor and M. Woodford eds., *Handbook of Macroeconomics*, vol. 1A, 3-64.

2. Introducing Money in the Neoclassical Model (2 lectures).

Money in the Utility Function (MIU) models. Cash in Advance constraint models. The Welfare Costs of Inflation and the Friedman- Rule. The Cashless Economy. Neutrality of Money. Price - Level determination under different monetary rules.

- Galí2008, chapter 2.
- Walsh2003, chapter 2 and 3.
- Woodford2003, chapters 1.3. and 2.
- (*) Cooley, T. and G. Hansen (1989)" "Inflation Tax in a Real Business Cycle Model", *American Economic Review*, 79, issue 4, 733-748.
- Friedman, M. (1969): The Optimum Quantity of Money and Other Essays, Aldine Press, Chicago, IL.
- Sidrauski, M. (1967): "Inflation and Economic Growth", *Journal of Political Economy*, 104, issue 4, 661-682.

- Correia, I., and P. Teles: "The Optimal Inflation Tax", *Review of Economic Dynamics*, 2, issue 2, 325 346.
- 3. The Basic New-Keynesian Framework (2 lectures).

Empirical evidence on sticky-prices. The Calvo model. The New-Keynesian Phillips curve. Equilibrium dynamics under alternative monetary rules.

- Galí2008, chapter 3.
- Walsh2003, chapter 5.
- Woodford2003, chapter 4.
- Blanchard O. and C. Kahn (2002): "The Solution of LInear Difference Models under Rational Expectations", *Econometrica*, 48, 1305-1311.
- Yun, T. (1996): "Nominal Price Rigidity, Money Supply Endogeneity and Business Cycles", *Journal of Monetary Economics* 37, 345-370.
- 4. Monetary Policy Design in the Basic New-Keynesian Framework. (2 lectures) Simple monetary policy rules. The Taylor Principle. A Welfare criterion. Optimal monetary policy and its implementation. Cost-push shocks. Discretion vs. Commitment. The Zero-Lower Bound.
 - Galí2008, chapters 4 and 5.
 - Woodford2003, chapter 6.
 - Adam, K. and R. Billi (2006): "Optimal Monetary Policy under Commitment with a Zero Bound on Nominal Interest Rates", *Journal of Money, Credit and Banking*, 38, issue 7, 1877-1905.
 - Barro, R. and D. Gordon (1983)" "A Positive Theory of Monetary Policy in a Natural Rate Model", Journal of Political Economy, 91, issue 4, 589-610.
 - Benigno P. and M. Woodford (2005): "Inflation Stabilization and Welfare: The Case of a Distorted Steady State", *Journal of the European Economic Association* 3, issue 6, 1185-1236.
 - Bullard J. and K. Mitra (2002): "Learning About Monetary Policy Rules", *Journal of Monetary Economics*, vol. 49, issue 6, 1105-1130.
 - (*) Clarida, R., J. Galì and M. Gertler (1999): "The Science of Monetary Policy: A New-Keynesian Perspective", *Journal of Economic Literature*, 37, 1661-1707.
 - Debortoli, D. and R. Nunes (2007): "On Linear Quadratic Approximations", unpublished manuscript.
 - Eggertsson, G., and M. Woodford (2003): "The Zero-Bound on Interest Rates and Optimal Monetary Policy", *Brooking Papers on Economic Activity*, 1, issue 1, 139-211.

- Orphanides, A (2003): "The Quest for Prosperity Without Inflation", Journal of Monetary Economics, 50, 633-663.
- Schmitt-Groh, S. and M. Uribe (2004): "Optimal Fiscal and Monetary Policy under Sticky Prices", Journal of Economic Theory 114, 198-230.
- Yun, T. (2005): "Optimal Monetary Policy with Relative Price Distortions", American Economic Review, vol. 95, issue 1, 89-109.
- (*) Woodford, M. (2001): "The Taylor Rule and Optimal Monetary Policy", American Economic Review 91, issue 2, 232-237.

5. Alternative Sources of Nominal Rigidities (2 lectures).

Convex adjustment costs. Taylor models. State-dependent models. Sticky-Information models.

- Caplin A. and Spulber D. (1987): "Menu Costs and the Neutrality of Money", *Quarterly Journal of Economics*, vol. CII, issue (4), 703-725.
- Dotsey, M., R. King and A. Wolman (1999): "State Dependent Pricing and the General Equilibrium Dynamics of Money and Output", *Quarterly Journal of Economics*, vol. CXIV, issue 2, 655-690.
- Chari, V.V., P. Kehoe and E. McGrattan (2000): "Sticky Prices Models of the Business Cycle: Can the Contract Multiplier Solve the Persistence Problem", *Econometrica*, vol. 68, issue 5, 1151-1180.
- (*) Chari, V.V., P. Kehoe and E. McGrattan (2008): "New Keynesian Models: Not Yet Useful for Policy Analysis", NBER w14313.
- Fuhrer J. and G. Moore (1995): "Inflation Persistence", *Quarterly Journal of Economics*, 440, 2, 127-159.
- (*) Golosov M. and R. Lucas (2007): "Menu Costs and Phillips Curves", *Journal of Political Economy*, vol. 115, 171-199.
- Mankiw G. and R. Reis (2002): "Sticky Information vs. Sticky Prices: A Proposal to Replace the New Keynesian Phillips Curve", *Quarterly Journal of Economics*, vol. CXVII, issue 4, 1295-1328.
- Midrigan V. (2008), "Menu Costs, Multi-Product Firms and Aggregate Fluctuations", unpublished manuscript, NYU.
- Nakamura E. and J. Steinsson (2007): "Five Facts About Prices: A Reevaluation of Menu Cost Models", *Quarterly Journal of Economics*, vol. CXXIII, issue 4, 1415-1464.
- Rotemberg, Julio (1982): "Monopolistic Price Adjustment and Aggregate Output", *Review of Economic Studies*, 159, 517-531.