Advanced Macroeconomics:
Financial Macro, Recursive Contracts, and Taxes

Nicola Pavoni
Bocconi University

Topics Covered: The course is divided in three related sections.
In Part I, we will investigate various kinds of *frictions in financial arrangements* (from the absence of some markets to limited commitment, agency problems and informational asymmetries). The course will present first the basic 'tools' used in the analysis, and proceed then to examine various recent papers on the above topics as well as various applications. The typical applications will be on the recent financial crise(s) and their implications for macroeconomics and financial regulation.
In Part II, we will present modern theories of *optimal taxation and social insurance institutions* using results from the literature on mechanism design and its extensions to dynamic environments. We will introduce the methodology of recursive contracts. For example, in studying the design of efficient unemployment compensation and 'welfare-to-work' schemes, we will analyze the various trade-offs involved in implementing such systems, with particular emphasis on balancing the efficiency costs (e.g. the potential 'moral hazard' or perverse incentive effects on labour supply and private saving) against the welfare gains provided by the risk sharing features of the social insurance institutions of the labour market. The institutional picture will be completed by a review of the most recent contributions on optimal capital taxation in presence of asymmetric information and limited commitment.
In Part III, we will study few topics in the new growing field of *behavioral macroeconomics* and address the issue of defining welfare and optimal taxation in this context. In this part we will study papers aiming at enriching the neoclassical approach to macroeconomics, by emphasizing psychological and sociological factors, such as for example: cognitive biases, time inconsistent and 'non-rational' addictive behavior, fairness, and social status. We will study both positive and normative implications of such factors.

Objetives: This class is intended for students in their second year of their Ph D studies. Our objectives are twofold. First, students will acquire a deep understanding of fundamental results in the areas we will study. Second, students will learn how to read and present a published article, how to make a critical assessment of a paper, and how to pose a precise research question. To achieve the objectives of the class, students will be required to participate actively in the class. The class format includes regular lectures and student presentations. A key component of the class, are discussions of the key steps in analytical developments, and possible improvements/extensions of the papers we will study.

Examination: The evaluation of students taking the course for credit will be based on: (i) the presentation of one paper (from the list below) to the class; (ii) performance in the homework assignments and on the term-paper; (iii) participation in class. NB: The term-paper can be replaced by either a carefully done referee report or a solid research proposal on a topic related to class content.

Note on the syllabus: The papers indicated with ★ are required readings; those ♦ are papers that you are suggested for your class presentation. Other readings are optional "background reading".

Part I

Risk Sharing in Markets with Frictions

Limited Commitment and Default
Borrowing Constraints

- Kehoe, T. and D. Levine (1993): Debt Constrained Asset Markets, *Rev. Econ. Studies*, 865-888.
- ★ Kehoe, T. and D. Levine (2001): Liquidity Constrained vs. Debt Constrained Markets, *Econometrica*, 575-598
- Alvarez, F. and U. Jermann (2000): Efficiency, Equilibrium, and Asset Pricing with Risk of Default, *Econometrica*, 775-798.
- ♦ Hellwig, C. and G. Lorenzoni (2009): Bubbles and Self-Enforcing Debt, *Econometrica* 77(4), 1137-1164.
- Kocherlakota, N. 2008. "Injecting rational bubbles," *Journal of Economic Theory*, 142(1), pages 218-232

Collateralized Lending

- Chien, Y-L. and H. Lustig (2010): The Market Price of Aggregate Risk and the Wealth Distribution, *Review of Financial Studies*.
- ♦ Geanakoplos, J. (2010): 'The Leverage Cycle,' Cowles Foundation Discussion Paper No. 1304.
- Geanakoplos, J. (2010):"Liquidity, Default, and Crashes: Endogenous Contracts in General Equilibrium," Cowles Foundation Discussion Paper No. 1316.
- Kilenthong, W. T., R. Townsend (2011), "Market Based, Segregated Exchanges with Default Risk,"
- ★ Kiyotaki, N. and J. Moore (1997): Credit Cycles. *Journal of Political Economy*, 105(2), pp. 211-48.
- Lorenzoni, G. (2008): Inefficient Credit Booms, *Review of Economic Studies* 75 (3), 809-833
- Sinsek, A. (2011): "Belief Disagreement and Collateral Constrains," mimeo, Harvard University.

Agency Costs, Liquidity and Intermediation

- Allen. F. and D. Gale (2004): Financial Intermediaries and Markets, *Econometrica* 72, 1023-1061.

⇒ Bernanke, B. and M. Gertler (1989): Agency Costs, Net Worth and Business Fluctuations, *American Economic Review*, 79, 14-31.

- Holmstrom, B. and J. Tirole (1997): Financial Internediation, Loanable Funds and the Real Sector, *Quarterly Journal of Economics* 112, 663-691.
- Kiyotaki, N. and J. Moore (2008): Liquidity, Business Cycles and Monetary Policy, http://www.princeton.edu/˜kiyotaki/papers/ChiKM6-1.pdf

Part II

Introduction to Dynamic Mechanism Design and Recursive Contracts

- Ljungqvist, L., and T. J. Sargent, *Recursive Macroeconomic Theory*, Second Edition, MIT Press.

★ Kehoe, T. and D. Levine (2001): Liquidity Constrained vs. Debt Constrained Markets, *Econometrica*, 575-598

★ Stole, L. (2001) 'Lecture Notes on the Theory of Contracts and Organizations, mimeo, Chicago University (available for free on the web).

♦ Fudenberg, D., O. Holmström and P. Milgrom (1990), "Short-Term Contracts and Long-Term Agency Relationships," *Journal of Economic Theory*, 51(1): 1-31.

- Green, E. J. (1987), "Lending and Smoothing of Uninsurable Income," in *Contractual Arrangements for Intertemporal Trade*. (E.C. Prescott and N. Wallace, Eds.), Minnesota, Minnesota Press.

♦ Thomas, J. and T. Worral (1990), "Income Fluctuations and Asymmetric Information: An Example of Repeated Principal-Agent Problem," *Journal of Economic Theory, 51:* 367-390.

★ Kocherlakota, N.R. (1996), "Implications of Efficient Risk Sharing without Commitment," *Review of Economic Studies*, 63: 595-609.

♦ Messner, M. and N. Pavoni (2004), "On the Recursive Saddle Point Method," Bocconi WP no. 225.

- Messner, M., N. Pavoni, C. Sleet (2011), "On The Dual Approach to Recursive Optimization," mimeo, Bocconi University.
- Kehoe, Patrick and Fabrizio Perri (2002): "International Business Cycles with Endogenous Incomplete Markets" *Econometrica*, 70(3): 907-928.

Optimal Income Taxation, UI, and Transfers

Optimal Income Taxation

- Mirrlees, J. (1971), ‘An Exploration in the Theory of Optimum Income Taxation, Review of Economic Studies, 38(2), 175-208.
- Saez, E., (2001), “Using Elasticities to Derive Optimal Income Tax Rates,” *Review of Economic Studies*, 68, 205-229.
- ♦ Saez, E., (2002), “Optimal Income and Transfer Programs: Intensive Versus Extensive Labor Supply Responses,” *Quarterly Journal of Economics*, 117, 1039-1073.
- A. Abraham, S. Koehne, N. Pavoni, “Optimal Income Taxation with Asset Accumulation,” mimeo.
- Battaglini, Marco and Stephen Coate, Pareto Efficient Income Taxation with Stochastic Abilities, 2003, NBER Working Paper no.10119.
- Kleven, H.J., C.T. Kreiner, E. Saez, (2007)“The Optimal Income Taxation of Couples,” NBER Working paper, http://elsa.berkeley.edu/ saez/kleven-kreiner-saezNBER06couples.pdf

Optimal UI and Welfare Programs

- ★ Hopenhayn, H. and J.P. Nicolini (1997), “Optimal Unemployment Insurance,” *Journal of Political Economy,* 105(2): 412-438.
- ★ Pavoni, N. (2007), “On Optimal Unemployment Compensation,” *the Journal of Monetary Economics,* 54:1612-1630.
- ♦ Pavoni, N. (2008), “Optimal Unemployment Insurance, with Human Capital Depreciation, and Duration Dependence,” *in print,* the *International Economic Review*.
- ♦ Pavoni, N. and G. L. Violante (2007) “Optimal Welfare-to-Work Programs,” *Review of Economic Studies*, January.
- Landais, C., P. Michaillat, E. Saez (2011), “Optimal Unemployment Insurance over the Business Cycle,” http://www.nber.org/papers/w16526.pdf

Optimal Capital Taxation

Ramsey Taxation

- Chamley, Christophe, Optimal Taxation of Capital Income in General Equilibrium with Infinite Lives, Econometrica, 1986, vol. 54, pp.607-622.
- Ramsey, F. (1927), ‘A Contribution to the Theory of Taxation,’ Economic Journal, 37, 47-61
http://www.jstor.org/stable/pdfplus/2222721.pdf
- ♦ S. Albanesi, R. Armenter, ‘Understanding Capital Taxation in Ramsey Models,’
http://www.columbia.edu/ sa2310/Papers/RamseyNote.pdf
- Phelan, C. and E. Stacchetti (2001), “Sequential Equilibria in a Ramsey Tax Model,” *Econometrica*, 69(6), November: 1491-1518.

New Dynamic Public Finance

- ★ Golosov, M., A. Tsyviski, and I. Werning (2006), 'New Dynamic Public Finance: A User Guide, in *NBER Macroeconomic Annual*, MIT Press.
- Golosov, M., M. Troshkin, and A. Tsyviski, (2010), 'Optimal Taxation: Merging Micro and Macro Approaches, *Journal of Money, Credit and Banking.*
- Kocherlakota, N. (2010), *The New Dynamic Public Finance*, Princeton University Press.
- ♦ Kocherlakota, N. (2005): "Zero Expected Wealth Taxes: A Mirrlees Approach to Dynamic Optimal Taxation," *Econometrica* 73 (5), 1587–1621.
- Albanesi, S. and C. Sleet (2006), Dynamic Optimal Taxation with Private Information, *Review of Economic Studies*.
- ♦ Golosov, M. and A. Tsyvinski (2007): Optimal Taxation with Endogenous Insurance Markets, *Quarterly Journal of Economics*, May, 487-534.
- Gottardi, P. and N. Pavoni (2011): "Ramsey Asset Taxation Under Asymmetric Information, mimeo.
- ♦ Scheuer, F. (2011): Pareto-Optimal Taxation with Aggregate Uncertainty and Financial Markets, http://www.stanford.edu/~scheuer/aggregate_uncertainty_7.pdf

Part III

Behavioral Economics, Macroeconomics, and Taxes

- Akerlof, G. A., "Behavioral Macroeconomics and Macroeconomic Behavior," http://www.jstor.org/stable/pdfplus/3083349.pdf
- Bernhaim, B. D., A. Rangel, (2005), "Behavioral Welfare Economics," http://www.nber.org/papers/w14622.pd
- Sugden, Robert (2004), "The Opportunity Criterion: Consumer Sovereignty Without the Assumption of Coherent Preferences." *American Economic Review*, 94(4): 10141033.
- ★ Tahler, R., C. Sunstein "Libertarian Paternalism," http://www.jstor.org/stable/pdfplus/3132220.pd

Time Inconsistent Preferences (and Addiction)

- Angeletos, M., D. Laibson, A. Repetto, J. Tobacman, S. Weinberg, (2001) 'The Hyperbolic Consumption Model: Calibration, Simulation, and Empirical Evaluation,' *Journal of Economic Perspectives*, August.
- ★ Frederick, Shane, George Lowenstein, and Ted O'Donoghue (2002) "Time Discounting and Time Preference: A Critical Review." *Journal of Economic Literature*, 40(2): 351-401.
- Gul, F., and W. Pesendorfer (2001) "Temptation and Self-Control," *Econometrica*, 69(6): 1403-1436.

- Krusell, Per, Anthony Smith, and Burhanettin Kuruscu. (2010) "Temptation and Taxation." *Econometrica,* 78(6): 2063-84
- Laibson, David, (1997), "Golden Eggs and Hyperbolic Discounting." *Quarterly Journal of Economics,* 112(2): 443-77.
- O'Donoghue, Ted, and Matthew Rabin, (1999), "Doing It Now or Later." *American Economic Review* 89(1): 103-24.
- ♦ O'Donoghue, Ted, and Matthew Rabin, (2006), 'Optimal Sin Taxes,' *Journal of Public Economics*, 90: 1825-1849.
- O'Donoghue, Ted, and Matthew Rabin, (2007) 'Studying Optimal Paternalism, Illustrated by a Model of Sin Taxes,' http://www.jstor.org/stable/pdfplus/3132222.pdf
- Yazici, H., and N. Pavoni, "Optimal Bequest Taxation and Capital Subsidies over the Lifecycle."

Social Concerns, Identity, and Others

- ♦ Akerlof G.A., and R.E. Kranton (2000) " "Economics And Identity," *Quarterly Journal of Economics*, vol. 115(3): 715-753.
- Hogg, M. A., D. J. Terry and K. M. White, (2005), "A Tale of Two Theories: A Critical Comparison of Identity Theory with Social Identity Theory," *Social Psychology Quarterly,* http://www.jstor.org/stable/pdfplus/2787127.pdf
- Bewley, T. (1999), *Why Wages Don't Fall During a Recession,* Harward University Press.
- ♦ Cabrales, A., A. Calvo-Armengol, N. Pavoni, (2008), "Social Preferences, Skill Segregation, and Wage Dynamics, *Review of Economic Studies*, 75, January: 65-98
- Frank, R. G., (2004) "Behavioral Economics and Health Economics," NBER WP no. 10881.
- Camerer, C. F., U. Malmendier, (2004) "Behavioral Economics of Organizations," mimeo.