

G6220: Advanced Macroeconomic Analysis I
Expectations in Macroeconomic Analysis
Fall 2008, 1st part

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O.H.: Monday 16:30-18:00, or by appointment
Classes: Monday 9:00-10:50

CLASS DESCRIPTION: Starting from the benchmark of rational expectations, where agents at all dates know the full state of the economy and know the structure that generated this state, we will present several alternative models of imperfect information and expectations, and explore their implications for macro dynamics. These will include: (i) models where agents know the structure but only exogenously observe part of the state (signal extraction and global games), (ii) models where agents do not know the structure but can learn about it (Bayesian learning), (iii) models where agents do not know the structure and use boundedly-rational mechanisms to form expectations (least-squares learning), (iv) models where agents only observe part of the state each date but choose which part (rational inattention), (v) models where agents choose when to observe the state (inattentiveness and sticky information), (vi) models where agents receive incomplete news today about the future state (news shocks). Applications will include consumption, business cycles, inflation, and monetary policy.

READINGS: There is no textbook for this course. Every class we will cover topics from different articles or book chapters listed below. I expect you to read all the starred articles. The non-starred articles are for you to explore the material in more depth as you wish. There is an excellent book manuscript by Laura Veldkamp at her webpage <http://pages.stern.nyu.edu/~lveldkam/> that covers some of the material in this class, although our focus and approach will be different.

EVALUATION: There will be three long assignments, all long, but each different in style: one will consist of replication exercises from empirical papers, another involves writing a few referee reports on theoretical papers, and the third is to prepare an in-class presentation for the last day of classes.

READING LIST:

1. Public and private signals: Lucas' and Woodford's islands

- * Woodford, Michael (2002). "Imperfect Common Knowledge and the Effects of Monetary Policy." In P. Aghion, R. Frydman, J. Stiglitz, and M. Woodford, eds. *Knowledge, Information and Expectations in Modern Macroeconomics*, Princeton: Princeton University Press.
- * Lucas, Robert E. Jr. (1973). "Some International Evidence on Output-Inflation Trade-Offs." *American Economic Review*, 63, 326-334.
- * Wallace, Neil (1992) "Lucas' Signal Extraction Model." *Journal of Monetary Economics*, 433-447.

Hellwig, Christian (2002). "Public Announcements, Adjustment Delays, and the Business Cycle." Manuscript.

- Rondina, Giacomo (2008). "Incomplete Information and Informative Pricing: Theory and Application." Manuscript. [solution algorithms]
- Hellwig, Christian (2008). "Heterogeneous Information and Business Cycle Fluctuations." Manuscript. [business cycles]
- Nimark, Kristoff (2005). "Calvo Pricing and Imperfect Common Knowledge: A Forward Looking Model of Rational Inflation Inertia" ECB working paper 474. [merging it with Calvo pricing]
- Amato, Jeffery and Hyun Song Shin (2003). "Public and Private Information in Monetary Policy Models." Manuscript. [more on link to monetary models]
- Lorenzoni, Guido (2008). "A Theory of Demand Shocks." Manuscript. [business cycles]
- Ui, Takashi (2003). "A Note on the Lucas Model: Iterated Expectations and the Neutrality of Money." Manuscript. [extension of Woodford]
- Lucas, Robert E. Jr. (1972). "Expectations and the Neutrality of Money." *Journal of Economic Theory*, 4, 103-124. [the classic]
- Phelps, Edmund S. (1970). "Introduction: The New Microeconomics in Employment and Inflation Theory", in *Microeconomic Foundations of Employment and Inflation Theory*, New York: Norton. [the classic]

2. Public and private signals: uniqueness, dynamics and persistence.

- * Morris, Stephen and Hyun Song Shin (1998). "Unique Equilibrium in a Model of Self-Fulfilling Currency Attacks." *American Economic Review*, 88(3), 587-97.
- * Morris, Stephen, and Hyun Song Shin (2006). "Inertia of Forward-Looking Expectations" *American Economic Review*, 96(2), 152-157.
- Heinemann, Frank (2000). "Unique Equilibrium in a Model of Self-Fulfilling Currency Attacks: Comment." *American Economic Review*, 90 (1), 316-318. [fixes a mistake]
- Morris, Stephen and Hyun Song Shin (2001). "Rethinking Multiple Equilibria in Macroeconomics. *NBER Macroeconomics Annual 2000*, 139-161, MIT Press. [a survey]
- Morris, Stephen and Hyun Song Shin (2003). "Global Games: Theory and Applications." In *Advances in Economics and Econometrics: Theory and Applications, Eighth World Congress*, ed. Mathias Dewatripont, Lars P. Hansen, and Stephen J. Turnovsky, 56-114. Cambridge: Cambridge University Press. [another survey]
- Angeletos, George-Marios, Christian Hellwig, and Alessandro Pavan (2006). "Signaling in a Global Game: Coordination and Policy Traps." *Journal of Political Economy*, 114(3), 452-84. [changing the timing of the game]
- Angeletos, George-Marios, and Ivan Werning (2006). "Crises and Prices: Information Aggregation, Multiplicity, and Volatility." *American Economic Review*, 96(5), 1720-36. [prices as signals]
- Hellwig, Christian, Arijit Mukherji and Aleh Tsyvinski (2006) "Self-Fulfilling Currency Crises: The Role of Interest Rates." *American Economic Review*, 96 (5), 1769-1787. [prices as signals]
- Townsend, Robert (1983). "Forecasting the Forecasts of Others." *Journal of Political Economy*, 91, 546-588. [the classic]

3. Public and private signals: welfare, information disclosure, and policy

- * Morris, Stephen and Hyun Song Shin (2002). "The Social Value of Public Information." *American Economic Review*, 92(5), 1521-1534.
- * Angeletos, George-Marios and Alessandro Pavan (2007). "Efficient Use of Information and Social Value of Information." *Econometrica*, 75(4), 1103–1142.

Hellwig, Christian (2005). "Heterogeneous Information and the Welfare Effects of Public Information Disclosures." Manuscript. [in the NK model]

Roca, Mauro (2006) "Transparency and Monetary Policy with Imperfect Common Knowledge." Manuscript. [in the NK model]

Cornand, Camille and Frank Heinemann (2008). "Optimal Degree of Public Information Dissemination." *Economic Journal*, 118, 718-742. [in the NK model]

Svensson, Lars E. O. (2006). "Social Value of Public Information: Morris and Shin (2002) Is Actually Pro Transparency, Not Con." *American Economic Review*, 96(1), 448-452. [quantitative evaluation]

Angeletos, George-Marios and Alessandro Pavan (2004). "Transparency of Information and Coordination in Economies with Investment Complementarities." *American Economic Review*, 94(2), 91–98. [simpler example]

Amador, Manuel and Pierre-Olivier Weill (2006). "Learning from Private and Public Observations of Others' Actions." Manuscript. [expanding the setup]

Adam, Klaus (2007) "Optimal Monetary Policy with Imperfect Common Knowledge." *Journal of Monetary Economics*, 54 (2), 276-301. [optimal monetary policy]

Angeletos, George-Marios and Alessandro Pavan (2008): "Policy with Dispersed Information on Aggregate Shocks," Manuscript. [more on policy]

Lorenzoni, Guido (2008). "Optimal Monetary Policy with Uncertain Fundamentals and Dispersed Information." Manuscript. [more on policy]

4. Picking the precision of signals: rational inattention

- * Sims, Chris (2003). "Implications of Rational Inattention." *Journal of Monetary Economics*, 50, 665-690.

- * Sims, Chris (2007). "Rational Inattention: A Research Agenda." *American Economic Review*, 96.

Cover, Thomas and Joy Thomas (1991). *Elements of Information Theory*. John Wiley and Sons, New York, New York. [inattention background]

Luo, Yulei (2008). "Consumption Dynamics under Information Processing Constraints." *Review of Economic Dynamics*, 11, 366-385. [more consumption results]

Mackowiack and Wiederholt (2008). "Optimal Sticky Prices under Rational Inattention." *American Economic Review*, forthcoming. [two types of signals]

Tutino, Antonella (2008). "The Rigidity of Choice: Lifecycle Savings with Information-Processing Limits." Manuscript. [beyond linear-quadratic]

Admati, A. (1985). "A Noisy Rational Expectations Equilibrium for Multi-Asset Securities Markets." *Econometrica*, 53, 629-657. [the classic in finance]

Peng, Lin (2005). "Learning with Information Capacity Constraints." *Journal of Financial and Quantitative Analysis*, 40, 307–330. [finance application]

Peng, Lin and Wei Xiong (2006) "Investor Attention, Overconfidence and Category Learning." *Journal of Financial Economics*, 80, 563-602. [portfolio choice]

- van Nieuwerburgh, Stijn and Laura Veldkamp (2008). "information Acquisition and Under-Diversification." Manuscript. [more portfolio choice]
- Mondria, Jordi (2006). "Financial Contagion and Attention Allocation." Manuscript. [international finance]
- van Nieuwerburgh, Stijn and Laura Veldkamp (2008). "Information Immobility and the Home Bias Puzzle." *Journal of Finance*, forthcoming. [more international]

5. Picking the frequency of signals: inattentiveness

- * Reis, Ricardo (2006). "Inattentive Producers." *Review of Economic Studies*, 73(3), 793–821.
- * Mankiw, N. Gregory and Ricardo Reis (2002). "Sticky Information versus Sticky Prices: A Proposal to Replace the New Keynesian Phillips Curve." *Quarterly Journal of Economics*, 117, 1295-1328.
- * Abel, Andrew, Janice Eberly, and Stavros Panageas (2007). "Optimal Inattention to the Stock Market." *American Economic Review*, 97(2), 244–249.
- Reis, Ricardo (2006). "Inattentive Consumers." *Journal of Monetary Economics*, vol. 53 (8), pp. 1761-1800. [consumption application]
- Reis, Ricardo (2009). "A Sticky-Information General-Equilibrium Model for Policy Analysis. In: *Monetary Policy under Uncertainty and Learning*, edited by K. Schmidt-Heubel and C. Walsh, Central Bank of Chile: forthcoming, 2009. [DSGE setup, see also survey of empirical work]
- Mankiw, N. Gregory and Ricardo Reis (2006). "Pervasive Stickiness." *American Economic Review*, 96 (2), 164-169. [simpler case of DSGE]
- Mankiw, N. Gregory and Ricardo Reis (2007). "Sticky Information in General Equilibrium." *Journal of the European Economic Association*, 2 (2-3), 603-613. [simpler case of DSGE]
- Meyer-Gohde, Alexander (2007). "Solving Linear Rational Expectations Models with Lagged Expectations Quickly and Easily." Manuscript. [nice algorithm]
- Mankiw, N. Gregory, Ricardo Reis and Justin Wolfers (2004) "Disagreement about Inflation Expectations." In Mark Gertler and Kenneth Rogoff, eds., NBER Macroeconomics Annual 2003, pp. 209-248. [some data]
- Carroll, Christopher D. (2003). "Macroeconomic Expectations of Households and Professional Forecasters." *Quarterly Journal of Economics*, 118, 269-298. [more data]
- Klenow, Peter and Jon Willis (2007). "Sticky Information and Sticky Prices." *Journal of Monetary Economics*, 54, 79–99. [more data]
- Hellwig, Christian and Laura Veldkamp (2008) "Knowing What Others Know: Coordination Motives in Information Acquisition." *Review of Economic Studies*, forthcoming. [coordination in timing of updates]
- Gabaix, Xavier and David Laibson (2002). "The 6D Bias and the Equity Premium Puzzle," NBER Macroeconomics Annual 2003, 47(4), 257–312. [more finance]
- Ball, Laurence, N. Gregory Mankiw, and Ricardo Reis (2005). "Monetary Policy for Inattentive Economies." *Journal of Monetary Economics*, 52 (4), 703-725. [optimal monetary policy]
- Branch, William, George Evans, Bruce McGough (2008) "xxx." *Economic Journal*, xxx, xx-xx. [some more on policy]
- Reis, Ricardo (2008) "Optimal Monetary Policy Rules in an Estimated Sticky-Information Model." Manuscript. [more on policy]

6. Merging the two paradigms: costs of information and in actions

* Woodford, Michael (2008). "Information-Constrained State-Dependent Pricing." Manuscript.

* Abel, Andrew, Janice Eberly and Stavros Panageas (2007). "Optimal Inattention to the Stock Market with Information Costs and Transactions Costs." Manuscript.

Moscarini, Giuseppe (2004). "Limited Information Capacity as a Source of Inertia." *Journal of Economic Dynamics and Control*, 28(10), 2003–2035. [a link between inattentiveness and rational inattention]

Hellwig, Christian (2006). "Monetary Business Cycle Models: Imperfect Information." In S. N. Durlauf L. E. Blume, *New Palgrave Dictionary of Economics*, 2nd edition .[a short survey related to this class]