

European University Institute
Department of Economics
Fall 2010.

Villa San Paolo

Fridays 8:45 – 10:45, October 8 – December 10*

**Advanced Micro-Macroeconomics Course:
Learning in Games and in Macroeconomics**

**David Levine, Ramon Marimon,
Klaus Adam, Gaetano Gaballo and Blaz Zakelj**

This is a course designed for second year and more advanced researchers or post-docs in economics, but it is also open to first year researchers as well as other researchers, fellows or faculty of the EUI. As the title indicates, the course focuses on ‘learning in games’ as well as on ‘learning in macroeconomics,’ emphasizing issues which belong to both micro and macro economics.

All students are expected to actively participate in the course. Students taking the course for credit will have to give a short presentation of one paper related to the course, previously agreed with the faculty.

* Participants in the course must register to the MWP Moodle (if you do not have an username contact: Ognjen.Aleksic@EUI.eu). The schedule and papers to be presented by students registered in the course, as well as additional course material, will be displayed in the MWP Moodle.

Provisional syllabus

Basic Readings

Fudenberg, D. and D. K. Levine 1998 *The Theory of Learning in Games*
<http://books.google.com/books?hl=en&lr=&id=G6vTQFluxuEC&oi=fnd&pg=PR11&dq=fudenberg+and+levine&ots=SVLxTJ0w40&sig=jfTIIz2P6Dwm9rB0JgT8i8knrpE#v=onepage&q&f=false>

Fudenberg, D. and D. K. Levine [2009]: “Learning-Theoretic Foundations for Equilibrium Analysis,” *Annual Review of Economics*, 1
<http://www.dklevine.com/papers/annals38.pdf>

Evans, George W. and Seppo Honkapohja. 2001. *Learning and Expectations in Macroeconomics*. Princeton University Press.

Sargent, Thomas J. 1999. *The Conquest of American Inflation*. Princeton University Press.

Topics & lectures

1. [08/10 DL] The Basics: Self-Confirming Equilibrium.

Cho, I.K. and T. J. Sargent 2008 “Self-Confirming Equilibrium” *New Palgrave*.
ftp://zia.stanford.edu/pub/sargent/webdocs/research/sce_final.pdf

2. [15/10 DL] Steady State Learning, Subgame Confirmed Equilibrium and Superstition.

Fudenberg, D. and D. K. Levine 2005 “Superstition and Rational Learning,”
American Economic Review, 96: 1449-1476
<http://www.dklevine.com/papers/ham-o.pdf0>

3. [22/10 RM] Reassessing Rational Expectations, Adaptive Learning and Equilibrium selection.

Evans, George W. and Seppo Honkapohja. 2001. *Learning and Expectations in Macroeconomics*. Princeton University Press.

Lucas, Robert E., Jr. 1972a. “Econometric Testing of the Natural Rate Hypothesis.”
In *The Econometrics of Price Determination: Conference*, October 30-31, edited by Otto Eckstein. Washington, D.C.: Board of Governors, Federal Reserve System.

Lucas, Robert E., Jr. 1972b. "Expectations and the neutrality of money." *Journal of Economic Theory* 4 (2):103-124.

Marimon, Ramon. 1997. "Learning from Learning in Economics." In *Advances in Economics and Econometrics: Theory and Applications*, edited by David Kreps and Kenneth Wallis. Cambridge University Press.

Muth, John F., 1960. "Optimal Properties of Exponentially Weighted Forecasts," *Journal of the American Statistical Association*, 55, 290, pp. 299-306

4. [29/10 RM & BZ] Evidence on macro expectations. How learning can help to better explain data and policy design. Equilibrium selection through learning. Experimental evidence.

Caroll, Christopher D. 2003. "Macroeconomic expectations of households and professional forecasters ", *Quarterly Journal of Economics*, 118, 269-298.

Evans, George W., Seppo Honkapohja and Ramon Marimon. 2001. "Convergence in Monetary Inflation Models with Heterogeneous Learning Rules." *Macroeconomic Dynamics* 5,1, 1-31.

Mankiw, Gregory N., Ricardo Reis and Justin Wolfers. 2004. "Disagreement about Inflation Expectations," mimeo. Harvard University.

Marcet, Albert and Juan P. Nicolini. 2003. "Recurrent Hyperinations and Learning." *American Economic Review* 93 (5):1476-1498.

Marimon, Ramon and Shyam Sunder. 1993, "Indeterminacy of Equilibria in a Hyperinflationary World: Experimental Evidence," *Econometrica*, 61, 1073-1107. 1993.

Marimon, Ramon and Shyam Sunder. 1995. "Does a Constant Money Growth Rule Help Stabilize Inflation?: Experimental Evidence" *Carnegie-Rochester Conference Series on Public Policy*, 43, 111-156. 1995.

Zakelj, Blaz, 2010. "Experimental Evidence of Inflation Expectation Formation," UPF & EUI.

5. [05/11 DL] Universal Consistency, Calibration, and Boosting.

Foster, D. P. and R. Vohra [1999] "Regret and the Online Decision Problem" *Games and Economic Behavior*
http://gosset.wharton.upenn.edu/~foster/research/no_regret.pdf

6. [12/11 DL] Advanced Topics in Learning in Games: Learning Nash Equilibrium; Evolution; Forecasted Learning; Learning Backwards Induction.

Samuelson, L. 1998 *Evolutionary Games and Equilibrium Selection*

<http://books.google.com/books?hl=en&lr=&id=88zpfLLE9G4C&oi=fnd&pg=PR11&dq=larrysamuelson&ots=C6faKmo1Mr&sig=vik1nxj6KUjOSUpAbFvvyKuJwKY#v=onepage&q&f=false>

Foster, D. P. and H. P. Young 2006 “Regret testing: learning to play a Nash equilibrium without knowing you have an opponent,” *Theoretical Economics*
<http://gosset.wharton.upenn.edu/~foster/research/regretNash.pdf>

Weibull, J. 1997 *Evolutionary Game Theory*

http://books.google.com/books?id=m98ed0_Na1sC&printsec=frontcover&dq=weibull&hl=en&ei=67ehTPCRCM_CswaP4O2KBQ&sa=X&oi=book_result&ct=result&resnum=3&ved=0CDkQ6AEwAg#v=onepage&q&f=false

Young, H. P. 1993 “The evolution of conventions” *Econometrica*

<http://www.econ.jhu.edu/people/young/scans/EL16.pdf>

7. [19/11 RM] The policy maker as a modeler: misspecified policies and self-confirming equilibrium.

Cogley, Timothy and Thomas J. Sargent. 2005. “The Conquest of U.S. Inflation: Learning and Robustness to Model Uncertainty,” *Review of Economic Dynamics*, 8, 528—563.

Fudenberg, Drew and David K. Levine. 2007. Self-Confirming and the Lucas Critique,” Harvard University and Washington University.

Orphanides Athanasios and John C. Williams 2003. “Imperfect Knowledge, Inflation Expectations, and Monetary Policy” in Ben Bernanke and Michael Woodford, *Inflation Targeting*. Chicago, University of Chicago Press

Sargent, Thomas J. 1999. *The Conquest of American Inflation*. Princeton University Press.

Sims, Chris. 2003. “Implications of Rational Inattention,” *Journal of Monetary Theory*, 50 (3).

8. [26/11 GG] Forecasting others’ forecast and educative learning.

Gaballo, Gaetano. 2010. “Rational Exuberance,” EUI.

Guesnerie Roger. 1992. “An Exploration of Educative Justifications of the Rational Expectations Hypothesis”. *American Economic Review*, 82, 1254-78.

Pearce D.G.1984. "Rationalizable Strategic behavior and the Problem of Perfection," *Econometrica*, 52, 1029-1050.

Pearlman and Thomas Sargent 2004. "Knowing the forecast of others", *Review of Economic Dynamics*, 8, 480-497.

Townsend Robert 1983. "Forecasting the forecast of others," *Journal of Political Economy*, 91, 546-588.

9. [03/12 RM] The induction problem revisited. Subjective vs. Objective beliefs. Bayesian (ir)rationality. Perceptions and self-reinforcement learning.

Buera, Francisco, Alexander Monge-Naranjo and Giorgio Primiceri. 2008. "Learning the Wealth of Nations," NBER Working Paper No. 14595

Holland, John, Keith Holyoak, Richard Nisbett and Paul Thagard 1987. *Induction*, The MIT Press.

McGrattan, Ellen, Ramon Marimon and Thomas Sargent. 1990. "Money as a Medium of Exchange in an Economy with Artificially Intelligent Agents." *Journal of Economic Dynamics and Control*, 14, 329-74.

Popper, Karl R. 1979. *Objective Knowledge: An Evolutionary Approach*. Claredon, Oxford University Press.

Sargent, Thomas. 1993. *Bounded Rationality in Macroeconomics*. Claredon, Oxford University Press.

Sargent, Thomas J. 2007. "Evolution and Intelligent Design" *2008 American Economic Association presidential address*.

10. [10/12 KA & RM] Beliefs and Asset Prices. Euler-equation vs. long-horizon learning, learning and equilibrium.

Adam, Klaus, Albert Marcet, and Juan Pablo Nicolini. 2006. "Learning and Stock Market Volatility." *Computing in economics and finance 2006*, Society for Computational Economics.

Adam, Klaus and Albert Marcet. 2010. "Internal Rationality, Imperfect Market Knowledge, and Asset Prices," *Manheim University*.

Allen, Franklin, Stephen Morris, and Hyun Song Shin. 2006. Beauty Contests and Iterated Expectations in Asset Markets. *Review of Financial Studies* 19 (3):719–752.

- Branch, Willam and George Evans. 2008. "Learning about Risk and Return: A Simple Model of Bubbles and Crashes," University of Oregon.
- Easley, David and Maureen O'Hara. 2008. "Liquidity and Valuation in an Uncertain World," Cornell University.
- Preston, Bruce. 2005. "Learning About Monetary Policy Rules When Long-Horizon Expectations Matter." *International Journal of Central Banking*, 1(2), 81, 126.