

Topics in Macroeconomics II: Expectations and Optimal Policy

**2025-26 Academic Year
Master of Research in Economics, Finance and Management**

Description of the subject

Topics in Macroeconomics II
Total credits: 3 ECTS

Code: 32707
Workload: 75 hours
Term: 1st

Type of subject: Optative
Department of Economics and Business
Teaching team: Albert Marcet

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1. Teaching guide

Objective

The objective is to prepare students to do research on two potentially separate issues: models of learning where agents do not hold Rational Expectations (RE) and models of optimal policy under RE. We will discuss the relation with standard models of expectations, recursive contracts, agents that are heterogeneous in their expectations, incomplete markets and issues of voting. As usual in modern research there will be a constant interaction between models and data, and in particular surveys about expectations.

Contents

Part I: Learning to form expectations (Sections 1 to 5)

The standard paradigm about expectation formation in economic research is Rational Expectations (RE). Under RE agents are assumed to know the true distribution of those variables that are given to them. Much recent research departs from this assumption assuming economic agents do not know the true distribution of prices and exogenous variables.

We discuss various approaches to modelling expectations and study their implications for policy and prices in macro and finance issues: how can we model deviations from RE? how are equilibrium prices determined and computed? Are competitive asset markets optimal when agents do not have RE? does the economy converge to RE? Can we explain the behavior of observed macro and asset price data? Can we explain observed expectation surveys? In what sense are agents rational if they depart from RE?

We start by discussing a large literature on so-called “Bayesian learning”, where investors do not know the distribution of fundamental shocks, they may disagree about these distributions, but they are assumed to know and agree on the pricing function. We then discuss “internal rationality”, when investors may learn about asset prices.

Part II: Optimal policy (Sections 6 to 7)

We go back to the standard assumption of RE and analyse recent developments in optimal policy in dynamic setups, including recursive contracts, incomplete markets, partial information, heterogeneous agents, optimal issuance of government bonds (debt management) and dynamic voting.

2. Course Outline

PART I: LEARNING TO FORM EXPECTATIONS

(References with asterisk denote required reading)

Section 1: Departures from RE, Kalman Filter, Bayesian/RE, asset prices.

Alternatives to RE: A large literature studies models where agents do not know the distribution of fundamental shocks and they may disagree about their distribution. This literature is usually described as “Bayesian learning” or “agreeing to disagree” we dub this literature “Bayesian/RE”. We study how to formulate Bayesian/RE models, introduce heterogeneity and the basic properties of the models.

Background discussion of excess asset price volatility under RE.

Two myths: competitive markets aggregate information perfectly, agents with inferior information are driven quickly out of the market: (or, “If you are so smart why aren’t you rich?”)

Explaining asset pricing puzzles with Bayesian/RE. Diversity of beliefs.

References

- * Many discussions of the Kalman filter are available on internet, including wikipedia. A description for economists is found, for example, in the Ljungqvist and Sargent textbook.
- Bansal, R. and A. Yaron (2004): “Risks for the Long Run: A Potential Resolution of Asset Pricing Puzzles”, *Journal of Finance*, 59, 1481- 1509.
- Barberis, N., A. Shleifer and R. Vishny (1998): “A model of investor sentiment”, *Journal of Financial Economics*, Volume 49, Issue 3, 1 September 1998, Pages 307–343.
- Barberis, N., R. Greenwood, L. Jin, and A. Shleifer (2014). “X-capm: An extrapolative capital asset pricing model.” *Journal of Financial Economics*
- *Blume, L. and D. Easley (2006): “If You’re so Smart, Why Aren’t You Rich? Belief Selection in Complete and Incomplete Markets”, *Econometrica*.
- Campbell, J. Y. and J. H. Cochrane (1999): “By Force of Habit: A Consumption-Based Explanation of Aggregate Stock Market Behavior”, *Journal of Political Economy*, 107, 205-251.
- Cogley, Timothy & Sargent, Thomas J., (2008). “The market price of risk and the equity premium: A legacy of the Great Depression?,” *Journal of Monetary Economics*, vol. 55(3), pages 454-476, April.
- Cogley T. & Thomas J. Sargent, (2009). “Diverse Beliefs, Survival and the Market Price of Risk,” *Economic Journal*, Royal Economic Society. vol. 119(536), pages 354-376, 03.
- Gabaix, X. (2012) “Variable Rare Disasters: An Exactly Solved Framework for Ten Puzzles in Macro-Finance” *The Quarterly Journal of Economics*.
- Timmermann, A. (1993).”How learning in financial markets generates excess volatility and predictability of excess returns” *Quarterly Journal of Economics*, 108 1135-1145.

- *Xiong, W. (2013) “Bubbles Crises and Heterogeneous Beliefs”, *Handbook on Systemic Risk*, Cambridge University Press.

Section 2: Self-referential Learning, expectations and convergence to rational expectations

A hidden assumption in the Bayesian/RE literature is that agents have a lot of information about prices: they are assumed to know and agree on the pricing function. This section deviates from this setup studying models where agents learn about prices.

Models of learning when there is feedback between price expectations and actual prices. The T-map relating perceived to actual expectations.

Conditions for convergence to rational expectations, E-stability.

Stability under learning to select from a multiplicity of RE equilibria.

Learning with constant gain. Non-convergence, the o.d.e. with a small constant gain, escape dynamics.

References:

- Baley, I. and L. Veldkamp (2025) *The Data Economy, Tools and Applications*. Princeton University Press.
- *Evans, G. and S. Honkapohja, (2001) *Learning and Expectations in Macroeconomics*, Princeton University Press.
- Marcet, A. and T. Sargent, (1989), 'Convergence of Least Squares Mechanisms in Self-Referential Linear Stochastic Models', *Journal of Economic Theory* 48.
- Williams, N. (2019) "Escape Dynamics in Learning Models", *The Review of Economic Studies*, Volume 86, Issue 2.
- Woodford, Michael (1990). "Learning to Believe in Sunspots," *Econometrica* 58, 2, 277-308.

Section 3: Learning and asset Prices, Internal Rationality

Adaptive Learning and asset prices.

Using models of learning to address empirical issues and for policy analysis.

Internal Rationality: Rational agents learn about price.

Asset pricing puzzles.

References

- *Adam, K., A. Marcet and J.P. Nicolini (2016). "Stock Market Volatility and Learning", *Journal of Finance*.

- Adam K., A. Marcet and P. Kuang. (2012). “House Price Booms and the Current Account”, *NBER Macro Annual*, edited by D. Acemoglu and M. Woodford.
- *Adam, K., A. Marcet and J. Beutel (2017). ”Stock Price Booms and Expected Capital Gains”, *American Economic Review*.
- Adam K., A. Marcet (2011). “Internal Rationality and Asset Prices” *Journal of Economic Theory*.
- Belda, P (2025) “Capital Taxation and Asset Price Volatility”, working paper.
- Bray M. and D. Kreps, (1987), ”Rational Learning and rational expectations”, in *Arrow and the Ascent of Modern Economic Theory*, George Feiwel 597-625, University Press, New York.
- Bullard, J., and J. Duffy (2001): ”Learning and Excess Volatility”, *Macroeconomic Dynamics*, 5, 272-302
- Stefano Eusepi and Bruce Preston, (2011). ”Expectations, Learning, and Business Cycle Fluctuations”, *American Economic Review*.
- Zhang, R and T. Zhang (2025): ”AH Premium, a tale of Siamese twins”, *Journal of Empirical Finance*.

Section 4: Fiscal and Monetary Policy when agents learn

Departures from RE have implications about macro policy: some policies prevent convergence to RE equilibrium: hyperinflations and liquidity traps may arise. Second, we analyze effects of learning in the short run: slower transitions, much different effects of policy measures, a role for credibility.

Monetary policy and stock market (The fed put): if agents learn stock market fluctuations can be costly due to financial frictions, high consumption uncertainty and wealth effects.

References

- *Bullard, James & Mitra, Kaushik, (2002) ”Learning about monetary policy rules,” *Journal of Monetary Economics*, Elsevier, vol. 49(6), pages 1105-1129, September..
- *Eusepi, S and B. Preston (2018) “The Science of Monetary Policy: An Imperfect Knowledge Perspective” *Journal of Economic Literature*. Vol 65 N. 1.
- Evans, G. W., E. Guse and S. Honkapohja (2008) ”Liquidity traps, learning and stagnation,” *European Economic Review*, vol. 52(8), pages 1438-1463, November.
- Evans, George W, Honkapohja, Seppo & Romer, Paul (1998). ”Growth Cycles,” *American Economic Review*, vol. 88(3), pages 495-515, June.
- Gerko, Elena (2018) ”Expectations and Monetary Policy”, working paper LBS.
- Adrian Ifrim (2022) ”The Fed Put and Monetary Policy: An Imperfect Knowledge Approach”, working paper, Universitat Autònoma de Barcelona.
- Marcet, A. and J.P. Nicolini (2003), ”Recurrent Hyperinflations and Learning”, *American Economic Review*.
- *Molnar, Krisztina and Sergio Santoro (2014), ”Optimal Monetary Policy When Agents Are Learning”, *European Economic Review*, 66, 39-62.

- Fabian Winkler (2020) "The Role of Learning for Asset Prices and Business Cycles" *Journal of Monetary Economics* (2020)

Section 5: Surveys on Expectations

Eliciting expectations formation from survey data.

Evidence from Expectation Surveys: inertia, disagreement.

Testing RE.

Extrapolation of stock price growth. Sluggishness of inflation expectations.

Disagreement in the stock and bond market.

References

- *Adam, K., A. Marcet and J. Beutel (2017). "Stock Price Booms and Expected Capital Gains", *American Economic Review*.
- *Coibion O. and Y. Gorodnichenko (2012) "What can survey forecasts tell us about information rigidities?" *Journal of Political Economy* 120 (1), 116-159
- Coibion, O. and Y. Gorodnichenko (2015) "Information rigidity and the expectations formation process: A simple framework and new facts", *American Economic Review* 105 (8).
- Debortoli, D., L. Iovino, N. Pavoni and D. Zhang (2025) "Macroeconomic expectations and limited awareness", working paper.
- Giacoletti, M., K.T. Laursen and K. J. Singleton (2020) "Learning From Disagreement in the U.S. Treasury Bond Market" *Journal of Finance*, July 2020.
- Greenwood, R. and A. Shleifer (2014). "Expectations of returns and expected returns", *Review of Financial Studies* 27, no. 3: pp 714-746.
- Malmendier, U. and S. Nagel (2011): "Depression Babies: Do Macroeconomic Experiences Affect Risk Taking", *Quarterly Journal of Economics*, 126, 373-416.
- Malmendier, U. and S. Nagel (2015): "Learning from Inflation Experiences" *Quarterly Journal of Economics*
- Singleton K. J., "How Much 'Rationality' Is There in Bond-Market Risk Premiums?", AFA Presidential address, *Journal of Finance* August 2021 Vol. 76 Issue 4. Video: <https://www.youtube.com/watch?v=0BZ0cRTexO0>
- Vissing-Jorgensen, A. (2003): "Perspectives on Behavioral Finance: Does 'Irrationality' Disappear with Wealth? Evidence from Expectations and Actions" (2003), *Macroeconomics Annual*, Boston. NBER

Section 6: Optimal Policy: Preliminaries, Recursive contracts.

We start by reviewing the fundamentals of optimal policy under full commitment, complete markets and rational expectations. (references are either Chari and Kehoe or Ljungqvist and Sargent below)

Time inconsistency.

Recursive Contracts: formulating time-inconsistent policies recursively.

Introducing incomplete markets. Risk-sharing with Dynamic Participation Constraints.

References

- *Aiyagari, R, Marcet, A., T.J. Sargent and J. Seppälä (2002); "Optimal Taxation without State-Contingent Debt", *Journal of Political Economy*, December.
- Kydland, F. and E.C. Prescott (1977); "Rules Rather than Discretion; the Inconsistency of Optimal Plans", *Journal of Political Economy*, 85;
- *Lucas, R. E., JR., and N. L. Stokey (1983): "Optimal Fiscal and Monetary Policy in an Economy Without Capital" *Journal of Monetary Economics*, 12, 55-93.
- Kocherlakota, N. (1996) "Implications of Efficient Risk Sharing without Commitment" *The Review of Economic Studies*
- Ljungqvist, L. and T.J. Sargent (2004), *Recursive Macroeconomic Theory*, 2nd edition MIT Press.
- Chari, V.V. and P. Kehoe (1999): "Optimal Fiscal and Monetary Policy" in, *Handbook of Macroeconomics*, John Taylor and Mike Woodford, eds North Holland: Amsterdam
- *Marcet, A. and R. Marimon (2019); "Recursive Contracts", *Econometrica*.
- *Marcet, A. (2008); "Recursive Contracts", *Palgrave Dictionary*

Section 7: New Developments on Optimal Policy.

Introducing incomplete markets, implications for debt management.

Optimal policy with heterogeneous agents, standard results, implications for time consistency.

Introducing voting in a dynamic model of internal commitment.

Partial Information and optimal policy.

References

- Angeletos, G-M (2002) "Fiscal policy with non-contingent debt and optimal maturity structure", *Quarterly Journal of Economics*.
- Marco Bassetto & Jess Benhabib, (2006). "Redistribution, Taxes and the Median Voter," *Review of Economic Dynamics*, Elsevier for the Society for Economic Dynamics, vol. 9(2), pages 211-223, April.
- Anmol Bhandari & David Evans & Mikhail Golosov & Thomas J. Sargent (2017) "Fiscal Policy and Debt Management with Incomplete Markets", *Quarterly Journal of Economics*.

- Anmol Bhandari & David Evans & Mikhail Golosov & Thomas J. Sargent, (2017). "Public Debt in Economies with Heterogeneous Agents," *Journal of Monetary Economics*.
- Buera F. and J.P. Nicolini (2004) "Optimal Maturity of Government Debt with Incomplete Markets", *Journal of Monetary Economics*.
- *Debortoli, D. and R. Nunes "Fiscal Policy under Loose Commitment" (2010), *Journal of Economic Theory*
- Debortoli, D., R. Nunes and P. Yared (2021) "The Commitment Benefit of Consols in Government Debt Management" *American Economic Review: Insights* 4(2).
- *Faraglia, E., A. Marcet, R. Oikonomou and A. Scott, 2019, "Government Debt Management: The Long and the Short of It", *Review of Economic Studies*.
- *Greulich, K., S. Lacro and A. Marcet, 2023. "Pareto-Improving Optimal Capital and Labor Taxes" *Journal of Political Economy*.
- S. Lacro and A. Marcet, 2025, "Time Consistency by Heterogeneity", working paper.
- Hauk, E., A Lanteri and A. Marcet (2021) "Optimal Policy with Endogenous Signal Extraction", *Journal of Monetary Economics*.
- Marcet, A. et al. "Dynamic voting and time-consistent optimal policy", pre-working paper.
- Werning, I (2007) "Optimal Fiscal Policy with Redistribution" *Quarterly Journal of Economics* 122(2), 925–967.

3. Teaching Methodology and Prerequisites

All students will be accepted but knowledge of the Advanced Macro sequence in the MRes (or a similar sequence for visiting students) will be taken for granted.

The techniques and modelling approaches covered have applications to any field in economics.

This course is a natural follow-up to the Macroeconomics module of the Research Seminar, which is a prerequisite.

Training activities

Lectures, proposed readings, study and development of computer programs

There will be slides for many of the lectures but not all. Class attendance, slides, classnotes and required readings are the main resource for this course.

4. Assessment

There will be a short exam, with a lot of time, and a short paper (10 pages max) applying one of the issues described to some new setup. Each item (exam and paper) will count 50%.