Topics in Macroeconomics VI: Expectations, Asset Pricing and Macro Policy

2022-23 Academic Year
Master of Research in Economics, Finance and Management

1. Description of the subject

- Topics in Macroeconomics VI
- Total credits: 3 ECTS

Code: 32085
Workload: 75 hours
Term: 3rd

- Type of subject: Optative
- Department of Economics and Business
- Teaching Team: Albert Marcet (CREI, ICREA, BSE, UPF)

2. Teaching guide

Assessment

There will be a short exam, with a lot of time to solve a problem, 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%.

Course Description

Students from the Barcelona GSE can take this course if they receive authorization from their Program Director and myself. Although the topics covered are on macro and asset pricing the methodology and modelling approach has applications to any field in economics.

The course will touch on two potentially separate issues: models of learning about prices, where agents do not hold Rational Expectations (RE) about price formation, and models of optimal policy, including applications where agents are heterogeneous in their expectations, incomplete markets and voting. As usual in modern research there will be a constant interaction between models and data.

Models of learning about prices.

Under Rational Expectations (RE) investors are assumed to know the true distribution of asset returns. RE captures the idea that investors in financial markets are well informed and it is the standard paradigm about expectation formation in economics and finance research. But things are changing very fast, a wealth of recent research considers models where investors do not know the true distribution of asset returns and this is becoming quickly part of the standard paradigm.

We discuss various approaches to modelling expectations and study their implications for policy and prices in financial markets. A number of issues arise in this environment: how should we model expectations once we depart from RE? how are equilibrium prices determined and computed? Is the outcome of competitive asset markets optimal? Will prices converge to Rational Expectations? Can we explain the behavior of observed asset price data? Can we explain observed expectation surveys?

We discuss the interaction between models and data when investors learn about the economy but still behave rationally given the information they have. There are many approaches in the literature to depart from RE, we give a unified discussion and classification. Most of the literature on" learning" focuses on models where investors do not know the distribution of fundamental shocks, they disagree

about these distributions, but they areassumed to know and agree on the pricing function. We then discuss" internal rationality", when investors learn about asset prices but they invest optimally given their knowledge about prices.

Recent Developments on optimal policy.

We go back to the standard assumption of RE and analyse recent devel- opments in optimal policy in dynamic setups, including optimal fiscal and monetary policy under incomplete markets, partial information, heteroge- neous agents, optimal issuance of government bonds (debt management), dynamic voting in models of optimal policy as a way to overcome time in- consistency.

Course Outline

Section 1: Asset Prices, Empirical Evidence, RE and Expectation Surveys

To set up the stage we start with a background discussion of the empirical behavior of stock prices, excess volatility and risk premia and compare to equilibrium asset prices under RE: Many failures; Some successes: long run risk, time-varying risk aversion, rare disasters.

Investor Expectations: inertia, disagreement, testing RE, a better way to model expectations?

References

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- Bansal, R. and A. Yaron (2004): "Risks for the Long Run: A Potential Resolution of Asset Pricing Puzzles", *Journal of Finance*, 59, 1481-1509.
- 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.
- Gabaix, X. (2012) "Variable Rare Disasters: An Exactly Solved Framework for Ten Puzzles in Macro-Finance" *The Quarterly Journal of Economics*, 645700.
- Coibion, O. and Y. Gorodnichenko (2015) "Information rigidity and the expectations formation process: A simple framework and new facts", *American Economic Review* 105 (8).

Section 2: Bayesian/RE Learning and asset Prices

A quick background on the Kalman filter.

A standard approach to learning: many papers assume investors have imper-fect information about fundamental shocks but they still have full knowledge about price formation. Investors do not know the distribution of fundamen-tal shocks, they disagree about these distributions, but they are assumed to know and agree on the pricing function. In a way these investors have RE about prices so we dub these papers as: Bayesian/RE.

Explaining asset pricing puzzles with Bayesian/RE.

Diversity of beliefs.

We dispel two commonly held myths:

1- competitive markets aggregate information so that all investors know as much as the others.

2- agents with inferior information are driven quickly out of the market: (The Friedman hypothesis: if you are so smart why aren't you rich?)

In fact diverse beliefs are compatible with rational behavior, competitive markets and they can persist for a very long time.

Comparison of Bayesian/RE with alternative approaches: robust control, adaptive learning, anticipated utility, behavioral economics, natural expec- tations, K-level rationality.

References

- Many in the internet discuss the Kalman filter, including wikipedia. A description for economists is found, for example, in the Ljungqvist and Sargent macroeconomics textbook.
- 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.
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- Xiong, W. (2013) Bubbles Crises and Heterogeneous Beliefs, *Handbook on Systemic Risk*, Cambridge University Press.

Section 3: Self-referential Learning, expectations and convergence to rational expectations

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

Conditions for convergence to rational expectations, E-stability.

Using convergence under learning to select from a multiplicity of rational expectations equilibria.

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

References:

- 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, 337 - 368.
- 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 4: Learning and asset Prices, Internal Rationality

Adaptive Learning and asset prices.

A controversial proposal: using models of learning to address empirical issues and for policy analysis.

Investors learning about the pricing function.

Internal Rationality: Agents have limited information about price formationand they behave rationally given these beliefs.

Asset pricing puzzles.

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- Timothy Cogley & Thomas J. Sargent (2008). ”Anticipated Utility And Rational Expectations As Approximations Of Bayesian Decision

Making,"*International Economic Review*, , vol. 49(1), pages 185-221, 02.

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- Zhang, R and T. Zhang (2020) "AH Premium, A Natural Experiment", working paper, SUFE.

Section 5: More on Expectation Surveys.

Eliciting expectations behavior from surveys.

Extrapolation of stock price growth. Sluggishness of inflation expectations.

Disagreement in the stock and bond market.

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- *Adam, K., A. Marcet and J. Beutel (2017). "Stock Price Booms and Expected Capital Gains", *American Economic Review*.
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- Coibion, O. and Y. Gorodnichenko (2015) "Information rigidity and the expectations formation process: A simple framework and new facts", *American Economic Review* 105 (8).
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  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: Learning and Fiscal and Monetary Policy

Departures from RE have strong implications about macro policy. Central banks are starting to take an interest in this issue and to incorporate such features in the models they use for prediction. We study this issue first in terms of convergence: some policies prevent convergence to RE equilibrium.Furthermore policies may influence equilibrium selection and converge to different equilibria: hyperinflations and liquidity traps. Second, we analyze effects of learning in the short run: slower transitions, much different effectsof policy measures, a role for credibility.

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

References

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- Evans, George W, Honkapohja, Seppo& Romer, Paul (1998). ”Growth Cycles,” *American Economic Review*, , vol. 88(3), pages 495-515, June.
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- Marcet et al ”Disagreement about price expectations and policy”, pre-working paper.
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- Fabian Winkler (2020) ”The Role of Learning for Asset Prices and Business Cycles” *Journal of Monetary Economics* (2020)

Section 7: New Developments on optimal policy under RE: incomplete markets, heterogeneous agents, political economy equi- libria

We go back to the standard assumption of RE and analyse recent develop- ments in optimal policy in dynamic setups. Recursive contracts as a toolto analyse optimal policy. We start by establishing very quickly a common ground on optimal policy under complete markets and recursive contracts. We analyse recent developments on optimal fiscal and monetary policy un- der incomplete markets, partial information, heterogeneous agents, optimal issuance of government bonds (debt management). Some recent developments also allow to introduce dynamic voting in models of optimal policy, asa way to overcome time inconsistency.

References

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