

Information and Expectations: From Micro to Macro

Teacher: Gaetano Gaballo & Jamie Hentall Maccuish

Duration: 24h

Number of ECTS credits: 4

Education Level	Period	Language of instruction	Max. Staffing	Teaching Mode
DD	S1	English	20	IN-PERSON

Deanship Department: ECONOMIE-SD

Domain: FINANCE & ECONOMICS

Track: Macroeconomics

Course family: Macroeconomics, Monetary Economics, Surveys of Expectations

Keywords: ECONOMICS FINANCE DATA

SYNOPSIS

Information is a key ingredient for the efficiency of economic choices. However, information is typically incomplete, asymmetric across agents and costly to acquire. Many economic phenomena like booms and busts in economic growth, market crashes, bank runs may be thought as the result of sudden shifts in agents' expectations: but how should we model these phenomena? And how may data inform us on the way people form expectations? Answering these questions requires reconciling evidence on expectation surveys with simple models of belief formation and then to study their consequences for the general equilibrium.

DETAILED DESCRIPTION

Prerequisites: M1 courses in Microeconomics, Macroeconomics and Econometrics.

Course overview:

The first part of the course provides the basics for the comprehension of any signal extraction problem in Economics. We will introduce the concept of Rational Expectation Equilibrium, practice the techniques for signal extraction problems in Gaussian settings, review the literature on surveys of inflation expectations and make a step forwards in the comprehension of how strategic behavior can twist the use of information.

- we will introduce the concept of Rational Expectations Equilibrium, highlighting the differences between macro and micro notions of equilibrium;
- we will learn the basic techniques for the analysis of Gaussian signal extraction problems, in static and dynamic environments;
- we will discuss how the presence of pay-off complementarities may create externalities in the use or aggregation of information;
- we will discuss how we could measure the degree of information rigidities in surveys of expectations by consumers and professional forecasters.

The second moves beyond the imposition of gaussian restrictions and delves deeper into the microeconomics of information acquisition and the estimation of such models, to then return to think about their macroeconomic implications:

- we will introduce theories of information - Shannon information and its generalizations – and link these different models to different evidence on how people acquire information
- we will learn how to estimate models of learning and how the belief/preference identification problem necessitates additional identifying assumptions or use of subjective belief data
- we will study the versatility of costly information models by applying them to varied markets from mortgage products, to insurance and labor markets
- we will discuss the implications of such models of costly information acquisition to core macroeconomic concepts like the business cycle and the Philips curve

Principal Items: Rational Expectation Equilibrium, Bayesian updating with Gaussian distributions, Kalman Filter, Empirical Information Rigidities, Random Controlled Trials in Expectation Surveys, Rational Inattention, Estimation of imperfect information models.

Pedagogical Objectives: At the end of the course the student will be able to: i) solve Gaussian signal extraction problems, ii) know the essential literature on survey of expectations, iii) elaborate on the evidence about expectation formation, iv) understand the main ideas at the frontier of the literature on information frictions in Macroeconomics.

Skills: Interpreting economic phenomena under the lens of information frictions models, designing and extract information from surveys, construct and analyze simple models including information frictions.

Course organization - detailed outline: The course consists of height 3h lectures. The syllabus could marginally vary depending on available time and interest of students.

L1 - The Micro and the Macro of REE

- The Lucas Critique (Lucas, 1976)
- The Conquest of American Inflation (Sargent, 2001)
- Convergence to REE (Evans and Honkapohja, 2001)

L2 - Gaussian Signal Extraction

- Gaussian conditional distributions
- Working through orthogonality conditions
- Recursive expressions: Kalman Filter

L3 - Information Rigidities and Expectations: Empirics

- An empirical test of information rigidity (Coibion and Gorodnichenko, 2015)
- Individual Overreaction (Bordalo et al., 2020)
- Empirics and some Theories (Kohlhas and Walther, 2021)

L4 - Beauty Contest and Welfare

- Private vs public Information (Morris and Shin, 2002)
- (In)Efficient coordination (Angeletos and Pavan, 2007)
- (In)Efficient shocks (Angeletos et al., 2016b)

L5 - Costly Information Acquisition (Macro to Micro)

- Information theory 101 – Shannon information what is it and why is it useful?

- Linking signal extraction and models of learnings (Sims, 2003)
- Moving beyond signal extraction to costly information acquisition (Matějka and McKay 2015)
- Moving beyond Shannon costs of information (Fosgerau et al, 2017)

L6 - Evidence on models of information acquisition

- Random Utility - the competing model of discrete stochastic choice (McFadden 1974)
- Experimental evidence on costly attention (Dean and Neligh, 2023)
- Field evidence response under- and over-reaction to taxes (Morrison and Taubinsky, 2023)

L7- Implications of costly information

- Cyclical attention to mortgage rates (Macaulay, 2024)
- Learning about government policy - explaining mistaken beliefs (Hentall-MacCuish, 2024)
- Models that predict rather than assume behavioral biases (Kőszegi and Matějka, 2020; Caplin et al 2019)

L8 - Going back to the Macro Economy

- Rational Inattention to the News (Gaballo, 2016)
- Costly attention and the Philips curve (Afrouzi and Yang, 2021)
- Business Cycles under Rational Inattention (Mackowiak and Wiederholt, 2009)

TEACHING MATERIALS

A self-contained set of slides will be provided, covering each class in detail. There is no course book, but a suggested reference is: Information Choice in Macroeconomics and Finance (2012) by Laura L. Veldkamp, Princeton University Press.

TEACHING METHODS

In-person interactive classes. The first 30 minutes are devoted to the discussion of homework.

WORK AND EVALUATIONS

Work requested: Students should actively participate to all classes and will be required to work through light homework, which helps keeping track of the lectures.

Assessment of achievement:

Tool/method of evaluation	Duration	Weight in the final grading
Participation		20%
Homework		30%
Final exam		50%

The final exam consists in the discussion of a key paper in the field, using the concepts and the tools developed in class.

BIOGRAPHY

Gaetano Gaballo: Since July 2019 prof. Gaetano Gaballo is an Associate Professor at the Department of Economics and Decision Sciences at *HEC Paris* and since 2022 a CEPR research fellow. From 2011 to 2019, he was a Senior Economist in the Monetary Policy division at *Banque de France*. He had been affiliate professor at *Paris School of Economics* and an Economist in the Monetary Policy Research division at the *European Central Bank*. He held post-doc positions at the *European University Institute* and *Columbia University*.

His research interests are in Macroeconomics and Monetary Economics, with a particular focus on how economic agents form expectations and interpret changes in prices.

He is author of publications in the *Review of Economic Studies*, the *Journal of Monetary Economics* and the *American Economic Journal: Macroeconomics* among others. He is the Principal Investigator of the ERC Consolidator project “A Learning-from-Prices view of Inflation and Business Cycles” since 2023.

Jamie Hentall MacCuish: received his PhD in economics from University College London in 2023. During his time in the PhD program, he was a research scholar at the Institute for Fiscal Studies in London. Before starting the PhD, he worked as a software engineer. His research is in the fields of public economics and applied structural microeconomics but often overlaps with labour economics and macroeconomics. It particularly focuses on the determinants of inequality and the economic implications of the limitations of human cognition.

WAIVER POLICY

No waiver policy.