

Information and Expectations in Macroeconomics

Teacher: Gaetano Gaballo

Duration: 24 hours Number of ECTS credits: 4

Education Level	Period	Language of instruction	Max. Staffing	Teaching Mode
Master	S1	English	20	in-person

Deanship Department: Economics and Decision Sciences **Domain:** Finance and Economics

Track: Macroeconomics

Course family: Economic Theory, Monetary Economics

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 Bayesian updating and study their consequences for the general equilibrium. This course provides some answers by presenting the basic techniques to signal extraction in Gaussian environments and reviewing the essential of the literature on information frictions in Macroeconomics and Finance.

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 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 part reviews seminal models and recent ideas in the literature on information frictions in Macroeconomics and Finance:



- we will study asset pricing models as testbed to illustrate the typical mechanisms of information aggregation in markets and their failures;
- we will investigate the role of expectations in monetary models of the business cycle: from the prototypical Lucas' Island model to the celebrated New-Keynesian model;
- if time allows, we will discuss recent advance of the literature on Rational Inattention and its applications to Macroeconomics;
- if time allows, we will finally review classical models of bunk runs and currency attacks in the Global Games literature.

Principal Items:

Rational Expectation Equilibrium, Bayesian updating with Gaussian distributions, Kalman Filter, Empirical Information Rigidities, Random Controlled Trials in Expectation Surveys, Beauty Contests, Models of News and Sentiments, Learning from Prices.

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:

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 Overeraction (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 - Monetary Models of Business Cycles

- The Lucas' island model (Lucas, 1972)
- A fully microfunded model (Gaballo, 2017)
- News and the New Keynesian Model (Lorenzoni, 2009)



L6 - Learning from Prices

- Prices as signals about expectations
- The CARA asset pricing model (Grossman and Stiglitz, 1980)
- On the (im)possibility of information aggregation (Vives, 2014)

L7 - Rational Inattention

- Shannon Entropy and Mutual Information
- Static vs Dynamic Rational Inattention Problems
- Business Cycles under Rational Inattention (Mackowiak and Wiederholt, 2009)

L8 - Global Games

- Strategic Uncertainty
- Currency attacks, Banks Run
- Learning from Prices and Volatility

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 in all classes and will be required to work through light homework, which helps keep 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

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.

WAIVER POLICY

None