

Information in Financial Markets (Ph.D./ MS)
Prof. Laura Veldkamp
Syllabus

Classroom: Kravis 830 (tbc)

Class time: Wednesday 6:00-9:00PM

Office hours: Kravis 725, email me at lv2405@columbia.edu

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Course Description

Despite the title, the topic of the course is the data economy. This is a full semester course. It draws on tools from macroeconomics, finance, game theory, monetary economics and IO. The focus is on theories, with a discussion of measurement approaches. We will start with the tools – Bayesian learning, entropy / rational inattention, information frictions problems, and strategic games with heterogeneous information. Then we will use these tools to build up a dynamic model with data production, data depreciation, data markets, platforms. We'll consider financial data as a special case. These tools can be used for studying market power, regulation and welfare, firm dynamics, optimal taxation. I'll point to many open questions for research that the tools of the class could be used to answer.

We will also talk about best practices for doing theory research in economics. What makes a theory valuable? How do you choose the ingredients to include in a model? How do you get the motivation just right? How does one get theory or applied theory published in increasingly empirical fields?

Prerequisites

You are expected to have already taken a first year PhD sequence in microeconomics and/or finance theory.

Course Materials

Notes, slides, and deliverables (see below) will be posted on the class Canvas page. The course material consists of:

- Textbooks. I will distribute chapters from my new data economy textbook. There is no book you need to buy.

Here are some additional reference books that you might find helpful or interesting.

- Brunnermeier, Markus. Asset Pricing under Asymmetric Information: Bubbles, Crashes, Technical Analysis and Herding, Oxford University Press, 2001.
- Vives, Xavier. Information and Learning in Markets, posted at <http://webprofesores.iese.edu/XVives/books.asp>
- Information Choice in Macroeconomics and Finance, by me.
- Discussion articles. Presenting papers is an essential skill in academia. Practice makes perfect. Each student taking the class for credit needs to present one article. We will decide on the set of articles for presentation in the first couple of weeks of class, depending on class size and student interest.

Deliverables and Grades

The grade in this class is based on three components. Problem sets will be assigned for the first, lecture-based, part of the class only. Presentations will be in the later part of the class. A research proposal is due at the end.

1. Problem sets (40%)
2. Paper presentation(s) (20%)
3. Research proposal (40%)

Outline and Calendar

Session 1 (September 5, 7).

Introduction and overview. Why study information choice? Bayesian updating with normal variables. Measuring Information Flows. Entropy and mutual information. Comparing learning technologies.

Read before class: Chapters 1-3.4, 3.10 (Baley -Veldkamp book)

Related Reading: Sims (2003), Brunnermeier Ch. 1.1, Cover and Thomas (1991), ch.s 2,10

Session 2 (September ?).

Prediction problems and data in strategic games. Different uses of data. The role of private and public information in coordination games. Applications to price-setting models.

Read before class: Chapters 4-5

Related Reading: Morris and Shin (1998, 2002), Hellwig and Veldkamp (2007), Vives ch. 6.3, Amador and Weill (2006).

Due at the start of class: Problem set #1

Session 3 (October ?).

Portfolio Choice. Data choice in the noisy rational expectations model. Handling correlated risks and non-normal distributions.

Read before class: Chapter 5-6.

Related Reading: Admati (1985), Van Nieuwerburgh and Veldkamp (2009, home bias), Breon-Drish (2015), Chabakauri, Yuan and Zachariadis (2015)

Due at the start of class: Problem set #2

Session 4 (October ?).

Market power and data platforms. Data and firm competition. Data and demand elasticity in financial markets or auctions. Data intermediaries.

Related Reading: Kyle (1989), Rochet and Tirole (2003), Biais, Martimort and Rochet (2000)

Due at the start of class: Problem set #3

Session 5 (November ?).

Data economy and data valuation. How can we use these tools to talk about the data economy? How to value data as an asset?

Recommended Reading: Jovanovic and Nyarko (ecma, 1996), Veldkamp (2005),

Farboodi and Veldkamp (WP, 2019)

Due at the start of class: Problem set #4

Session 6 (December ?).

Data measurement and recent papers for discussion. Discussions will focus on the question of the paper at hand, as well as general strategies for developing successful theories and writing theory and applied theory papers.

Due at the start of class: Problem set #5