Understanding financial markets is an important challenge. Recently, there has been a number of issues related to designing financial markets that drew the attention of practitioners, regulators, and academics alike. Examples include optimal trade frequency in the presence of high-frequency trading, the design of financial benchmarks after the Libor scandal, regulation of transparency in over-the-counter markets (TRACE, Dodd-Frank act), stress tests, and the new opportunities and challenges related to the blockchain technology and crypto currencies.

The course reviews a selection of these issues from a theoretical perspective, drawing on a growing body of literature taking a market design perspective to financial markets. We are particularly interested in papers that cross the boundaries between fields and apply insights and techniques from market, mechanism, and information design to questions related to financial markets.

This is a topics course, designed for 2nd and 3rd-year PhD students in economics and finance programs but open to everyone interested in financial markets with the necessary technical background to understand the papers on the reading list. We discuss issues at the intersection of finance and market design, with emphasis on information design (transparency vs privacy of trading mechanisms) and market protocols (centralized exchanges versus over-the-counter markets, frequency of trade etc.)

We focus on recent advances in the topic and present open questions so that interested students can promptly come to the frontier and begin their own research.

**Grading**

Each student is required to present 1 assigned paper in class (students’ preferences over papers will be accommodated to the extent possible), submit a written research proposal, and present the proposal in class. Grading will be based on class participation (discussion, student presentations) and a final paper and presentation (a research proposal). Students are expected to read the assigned papers before class.

**Prerequisites**

Game theory and Price theory at the 1st year PhD level. Real analysis and probability theory at the level necessary to understand modern research papers on financial markets. Some prior exposure to finance, market and mechanism design is recommended but not necessary.

**Deadlines**

November 5 submission of a one-page abstract
December 13 full paper due
Week 1-2: A selection of workhorse models of financial markets. Information Aggregation.


Supplementary Reading:

- Ostrovsky (2012), “Information Aggregation in Dynamic Markets with Strategic Traders,” Econometrica, 80, 2595–2649

Week 3: High-Frequency Trading. Optimal Frequency of Trade.


Supplementary Reading:

• Pagnotta and Philippon (2018), "Competing on Speed," Econometrica, Vol 86, 1067-1116

Week 4: Price and Size Discovery.


Supplementary Reading:

• Wedow and Petrescu (2017), "Dark pools in European equity markets", ECB Occasional Paper 193


Supplementary Reading:


Week 6: Modeling Workshop


Supplementary Reading (OTC Markets):

- Farboodi, Jarosch and Shimer (2018), "The emergence of market structure", Working Paper

Supplementary Reading (Transparency versus Privacy):

- Cujean and Praz (2015), "Asymmetric Information and Inventory Concerns in Over-the-Counter Markets", Working Paper
• Bhattacharya (2016) "Can transparency hurt investors in over-the-counter markets?" Working Paper

Supplementary Reading (Financial Benchmarks):

• Youle (2014). "How Much Did Manipulation Distort the Libor?," Working Paper
• Duffie (2018), "Compression Auctions, With an Application to LIBOR-SOFR Swap Conversion," Technical Note
• Duffie (2018), "Notes on LIBOR Conversion," Technical Note
• Duffie and Dworczak (2019), "Robust Benchmark Design", Working Paper
• Chen (2017), "Libor’s Poker", Working Paper

Week 9: Stress tests


Supplementary Reading:


Week 10: Blockchain. Cryptocurrencies.


Supplementary Reading:

• Nakamoto (2008), "Bitcoin: A peer-to-peer electronic cash system"
• Abadi and Brunnermeier (2018), "Blockchain Economics," Working Paper
• Cong, He, and Li (2019), "Decentralized Mining in Centralized Pools," Working Paper
• Eyal and Sirer (2014), "Majority is not Enough: Bitcoin Mining is Vulnerable", in the 18th International Conference on Financial Cryptography and Data Security (FC).
• Chiu and Koeppl (2017), 'The economics of cryptocurrencies–bitcoin and beyond', Working Paper

Week 11: Student presentations of research proposals