

Financial Markets Microstructure

Lecture 1

Introduction and institutions

Chapters 0 and 1 of FPR

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This slide deck:

- 1 Logistics
- 2 Why do we need financial markets?
- 3 Types of financial markets
- 4 Types of agents in financial markets
- 5 Next on...

Contact Information

Lecturer: Egor Starkov

- Contact: absalon or email (egor.starkov@econ.ku.dk)
- Office hours: by appointment (or after lectures)

Schedule

2 hours of lectures once or twice a week

- **Wednesdays 13.00-15.00** (every week 6–20, except week 7 and week 16);
- **Fridays 10.00-12.00** (odd weeks 9–19).
- Same room (CSS 4.1.36) unless told otherwise
- Physical classes, no streams/recordings



Resources

- Get **the book** by Foucault, Pagano, and Röell.
 - We'll be using it a lot (incl. exercises).
 - I will be following edition 1 from 2013, but you can get ed.2 from 2024
 - Will switch to research articles towards the end of the course.
- Everything else (lectures, problem sets for exercise classes, etc.) is on **Absalon** – check regularly.
- I will upload the **slides** before the lectures for you to print out.
 - Those may contain omissions!
- **2020 lectures** are on youtube (not recommended).
- **Study groups** may be helpful. Email me before 17:00 Thu, Feb 05 if you are looking for a group.



Problem sets and Exam

- readings and exercises after lectures (esp. in earlier part of the course)
 - voluntary; will go through some in class
 - readings not always immediately related to theory, but always related to the course
- 2 problem sets (larger, cumulative, more open-ended?)
 - Voluntary too. Take them as an opportunity to check your progress
- final exam: 12-hr take-home exam.



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Why do we need markets?

- 1 What is a market?
- 2 Why do we need markets?



Why do we need markets?

- 1 **What** is a market?
 - Institution for property rights exchange
- 2 **Why** do we need markets?



Why do we need markets?

1 What is a market?

- Institution for property rights exchange

2 Why do we need markets?

- Want property rights to be allocated **efficiently** in the society
- In plain words: want to transfer stuff from those own but do not value it much to those who value it a lot, in exchange for other stuff.
- Smooth functioning of markets is essential for this



Why do we need Financial Markets?

- **Financial markets:** markets for financial assets
- **Financial assets:** move wealth across time and contingencies:
 - Financial assets provide 'contingent cash flows'
 - Stocks, bonds, derivatives...



Why do we need Financial Markets?

- **Financial markets:** markets for financial assets
- **Financial assets:** move wealth across time and contingencies:
 - Financial assets provide 'contingent cash flows'
 - Stocks, bonds, derivatives...
- **Purposes** of financial markets:
 - Forum for trade in the stock (**consolidation**);
 - Each trader can compare their private valuation against the current price, which conveys some historical info (**transparency**);
 - Guarantee of getting what is paid for (**security**)
- **Specifics** of financial markets:
 - Common-value setting with dispersed/private information
 - Because of info asymmetries, usually organized in a specific way and heavily regulated.



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Types of Financial Markets

- **Primary markets:** “Allocate savings to investment”
 - Issues of new assets (typically by investment bank)
- **Secondary markets:** “Reallocate investments across savers”
 - Trade the existing assets on exchange

Types of Financial Markets

- **Primary markets:** “Allocate savings to investment”
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 - Trade the existing assets on exchange
- This course: focus on secondary markets, such as
 - Stock and bond markets
 - Derivative markets
 - Currency (FX) markets
 - Most insights will apply to commodity markets that deal in futures (oil/gas, metals, food...)
 - (Corporate finance looks at primary markets)

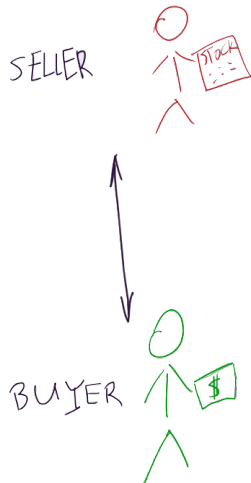
Market Setups

Markets can be set up in different ways

- 1 Decentralized “markets”
- 2 Dealer markets
- 3 Order-driven markets
 - Continuous
 - Call
- 4 Hybrid (dealer+order) markets

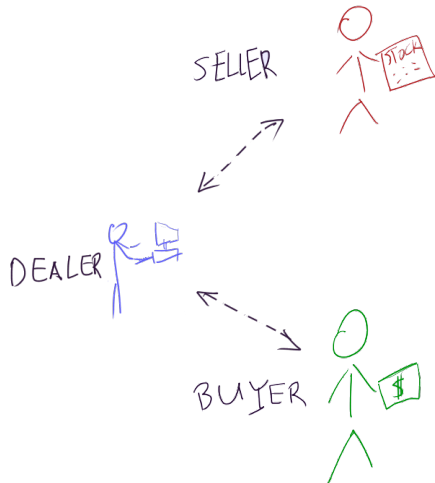
Direct trading

- Buyers and sellers could interact **directly**.
- A useful benchmark, but not a very interesting case.



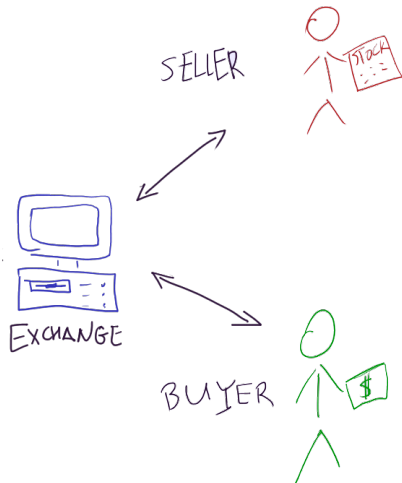
Dealer Markets

- A **dealer** quotes a bid and an ask price (valid up to certain number of shares)
- Bid-ask spread:
 - Narrow to fend off competitors
 - Wide to generate trading profits
- Dealer exchanges: Nasdaq



Order-driven markets

- Timing
 - 1 Orders are submitted
 - 2 Trades are arranged
- The markets can vary in different ways
 - Frequency of trading: how often?
 - Order precedence: price/time/public
 - Pricing rule: uniform/discriminatory price, determined from orders/taken from other exchange
 - Opening/closing: are there any special trading rules?



Order types

- There's a tremendous amount of different order types. We focus on two main ones:
- **Market order** specifies quantity: “buy 500 shares at best available price”.
- **Limit order** specifies a quantity and a price: “will buy 500 shares at below price 40”
 - Limit orders sit in **the Limit Order Book** until they can be executed
- Trades occur either through
 - 1 a limit order 'match' (somebody posts a bid price above the lowest ask price), or
 - 2 through market orders against the LOB

Order-driven markets: Continuous auctions

- LOs together compose a **Limit Order Book**.
 - Any given LO can be **marketable** or not.
 - A marketable LO is expected to execute immediately given other orders in the LOB.
- Traders can choose orders best for them:
 - Patient traders are more passive: use limit orders (fill LOB)
 - Impatient traders are more aggressive: use market orders (deplete LOB)
- **Discriminatory price**: depends on how your order is matched
- Continuous LOB exchanges: NYSE (both electronic and 'outcry'), LSE, BATS, Euronext

Order-driven markets: Call (batch) auctions

- Orders are collected (in a 'batch') and cleared at a certain frequency
- The price is chosen so as to maximize the number of executed orders
- **Uniform price**: all orders in a batch trades at same price
- In theory, very good efficiency properties: all profitable trades are carried out
- But... slower than the continuous market
- Call auction exchanges: most of the major exchanges (e.g. Nasdaq, LSE, Euronext) operate call auctions together with other trading methods. Danish electricity markets work via call auctions afaiik.

Exchange versus over-the-counter

Exchange trading

- Organized exchange venues (NYSE, NASDAQ, LSE, ...)
- Generally offer a lot of services
 - Liquidity and stability through *specialists/market makers*
 - Clearing and settlement
 - Transparency

Over-the-counter (OTC) trading

- Off-exchange venues
 - Use quotation systems to match dealers and traders
 - However, no guarantee of liquidity (no specialists)...
 - ...nor transparency: may not publish trade information

Dark liquidity: Liquidity in 'private exchanges' (not public)

Other dimensions

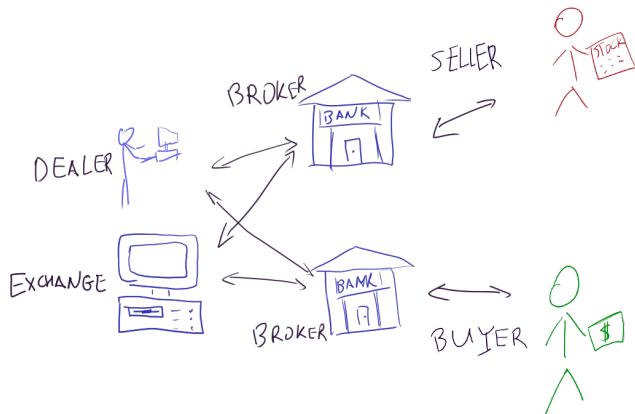
- Many other aspects in which markets can differ:
 - Transparency about current orders
 - Transparency about past trades
 - Fragmentation
 - Listing requirements
 - ...
- Who benefits from markets being organized in a particular way? Who loses?

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Players

- **Traders/investors:** the end-“consumers” or suppliers of the asset
- **Brokers:** the intermediaries who relay investors’ orders to the market (investment banks)
- **Dealers/market-makers:** match orders from different sides of the market



Types of traders

Traders can be classified:

- **Retail investors** vs **institutional investors**

- **Retail:** regular people, individuals with money. Eaton et al. (2020): retail accounts for about 20% of market activity.
- **Institutional:** pension funds, mutual funds, hedge funds, private equity funds...

- **Informed** vs **uninformed** investors

- Retail investors and pension funds usually have little “private information”.
- Hedge funds and short-selling funds have good analytics and can react fast.
- “Private information” \neq “insider information”! Insider trading is banned in most jurisdictions.

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Motivating questions

- 1 How are market prices created? How are they influenced by traders?
- 2 How should traders act on their information?
- 3 Do the market rules matter? And which rules are good for whom?
- 4 How do we measure if markets are working well?

Course overview

- Institutional details, policy issues, applications (ch.1, 6-10, articles)
- Theories to understand and to analyze policy (ch.3-4, 6-10, articles)
- Some empirical issues (ch.2, 5, articles)

Prerequisites: Finance, micro, games, (math)

Disclaimer: We focus on 'rational' models in this course. Behavioral finance is a complementary and exciting topic.

For next class

- 1 Match into groups if you want / message me if you are looking for a group or group members.
- 2 Read the article about GameStop (on Absalon). Think/discuss:
 - What kind of traders are involved on both sides? Based on that fact: why has this story made the news?
 - Would now be a good time to buy GameStop stock? Why/why not?
 - Robinhood (trading app) halted trading in GameStop stocks at some point. Is there a scope for some regulatory intervention to prevent this kind of exclusion of retail traders?
- 3 Read the Nikola story. Is Hindenburg Research an insider? Is it an informed trader?
- 4 Do exercises 1-3 after Chapter 1 (pages 44-45) in the textbook