Price setting in Matching Markets
Reading: Ch 11.1 of EK

Bargaining & Power in Networks
Reading: Ch. 12 of EK

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Price-setting in real world
Second price/English auction
Stock market (Section 11.1)
Stock markets

- Stock exchanges - determine MCP
  - NYSE: algorithm + designated market maker (DMM)
  - NASDAQ: algorithm only
- Trading systems - match buyers & sellers
  - Direct Edge, Goldman Sachs, Investment Technologies Group (ITG)

Order book

- 1. Limit order (big traders)
  - A: sell 100 shares at >= $5/share
  - B: sell 100 shares at >= $5.5/share
  - C: buy 100 shares at <= $4/share
  - D: buy 100 shares at <= $3.5/share
Order book

- 2. Market order (small traders)
  - Buy 150 shares at market price => 100 shares at $5/share and 50 shares at $5.5/share

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<td>$5.50 - ASK</td>
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<td>$4.00 - BID</td>
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Trading large volumes of shares

- Hedge funds, insurance companies, mutual funds (Fidelity, Vanguard), banks, etc. trade in large volumes
- 1. Split the volume into small fragments - why?
- 2. Dark pool
  - Examples: Goldman Sach’s Sigma-X, ITG
  - Trade large volumes at market price without revealing identity
  - Accounts for 15% of US volume (2014)
  - Pros: Reduced impact on market, lower transaction cost
  - Cons: Lack of transparency, exchange prices may not reflect the real market, predatory trading by hedge funds
Example of matching buyers with sellers: Tradesparq

In today’s global economy, even small American businesses often turn to China and India to manufacture their products, but finding a reliable supplier across the world isn’t easy.

Tradesparq, a Shanghai-based startup, is trying to simplify the process of locating a trustworthy manufacturing partner by allowing business owners to search a directory of global suppliers and match those results against their social network, Think Alibaba meets LinkedIn.

https://www.youtube.com/watch?v=fxQ1JLh7U_c

Bargaining & Power in Economic Networks

Chapter 12
Power

- Is it an individual property?
- Or a result of social relations?
  - Richard Emerson (1962)
  - Social relation between two people produces "values" for them
  - Imbalance of values ➔ power
  - Division of values: Network exchange theory

Who is most powerful?

- B
- Why?
  - Dependence: A and C completely depend on B
  - Exclusion: B can exclude A or C from being his "best friend"
  - Satiation: B will maintain relationship only if he gets a better share
  - Betweenness: B has the highest betweenness centrality measure
Experimental Setup

Experimental results and analysis
Mathematical framework
Stable outcomes

Stable outcomes in network exchange

- Outcome = (matching, values)
- What is a stable outcome?
  - Opportunity + Incentive → unstable
- How to check for stability?
- Does a stable outcome always exist?
Stable outcomes

- Limitations of stable outcomes
  - Extreme values
    - Explanation - ultimatum game
  - Ambiguity
    - Solution - Nash bargaining

Ultimatum game

- A little dramatic here!
  - [https://www.youtube.com/watch?v=BfE4ZL08twA](https://www.youtube.com/watch?v=BfE4ZL08twA)
- Difference between real-world experimental outcomes and stable outcomes
  - Stable outcomes sometimes go to the extreme
- Explanation
  - People play a different game than the one on paper!

Nash bargaining solution
Resolves ambiguity in stable outcomes
Research results

- Computation
  - Convergence - Azar+ (2009)
  - Balanced outcome - Kleinberg+ (2008)

- Modeling
  - Cooperative game theory
  - Stable outcomes: core
  - Balanced outcomes: kernel

- Open
  - Large scale experimentation