

Overview of Short Course

Module #1: Markets, Everywhere.

Module #2: The Prisoner's Dilemma.

Module #3: Asymmetric Information (moral hazard, ^{adverse} selection)

Module #4: Auctions (+ online advertising).

Module #5: Participatory Budgeting.

Module #6: Bitcoin.

Markets in Computer Science (I)

Examples:

- Amazon
 - improved an existing market
- Google/Facebook (market for advertising)
- Uber/Lyft (market for rides)
 - made an existing market much bigger

Markets in Computer Science (II)

More examples:

- Airbnb (market for spare rooms)
- eBay (market for bric-a-brac)
- StubHub (second-hand tickets)
- Upwork, Fiverr, etc. (temp/freelance jobs)
- Tinder, etc. (market for dates)



Centralized vs. Decentralized

Centralized market: transactions dictated by platform.
(e.g., centrally planned economy)

Decentralized market: participants transact directly,
(e.g., U.S. college admissions)

Our examples?: mostly decentralized.

- exception: Uber/Lyft (question: why have a reputation system?)

In between: platform-recommended transaction, ^{batched} transactions.

- example: rider-driver matching in Uber (switch in 2017 to batched transactions)

Reimagining the NYSE

Currently: transactions executed immediately, first-come, first-serve.

Issue: high-frequency trading. (several billion USD/year)

- 2010: Spread Networks invests \$300M to save 3ms!

Question: better design of the NYSE?

Idea: [Budish/Cramton/Shim \approx 2013] process buy/sell orders in batches, compute a common clearing price.

- example: buy orders 10, 8, 6, 4, 2
sell orders 1, 3, 5, 7, 9

3 matches
(at a price between 5 and 6)

Network Effects and Regulation

Vocabulary: network effect = effect of one user of good/service has on value of good/service to other users.
(cf., Metcalfe's Law)

- exs: social networks, operating systems

⇒ congestion (overwhelming # of participants) is inevitable

Related issue: Antitrust regulation of tech companies

- concern: strong network effects + many users ⇒ high switching costs

⇒ anti competitive behavior

Congestion and Signalling

Congestion = overwhelming # of possible transactions.

Possible solution = costly signals.

- signalling qualifications (e.g., grades) vs. signalling exceptional interest (e.g., early admission)

Further examples:

- market for professor positions in economics
- dating platforms (Lee/Niederle 2015) for Korean dating site, Tinder "super Likes")