Economics of Strategy for Online and Digital Markets

Topics in Economic Theory and Policy, 31C01000

Iivo Vehviläinen

February 12, 2019

Aalto University
iivo.vehvilainen@aalto.fi

Lecture 11: Sharing economy

Outline

- Recap: Platform design
- Sharing economy / peer-to-peer markets
- Reputation
- Externalities
- Course feedback

Reminder: Platform design

- Platforms are matchmakers: how matches succeed will depend on the design of the platform.
- Design of the platform needs to take into account how both, or all, sides of the platform will interact.
- Externalities within the groups and between groups make the design problem tricky even for one platform.
- Platform competition makes the design choices even more complex.

Reminder: Openness

- Sometimes a firm can decide if it is a platform or not and how many sides it opens. Sometimes the "platformness" is part of the business.
- Network effects key to deciding on compatibility:
  - Compatible systems bring have larger networks (e.g. Anrdoid).
  - Incompatible systems protect the platform because of *switching costs* (e.g. Apple iOS).
- Within a platform, the firm chooses whether to provide all services itself or allow others to do some.

Reminder: Platform demand and pricing

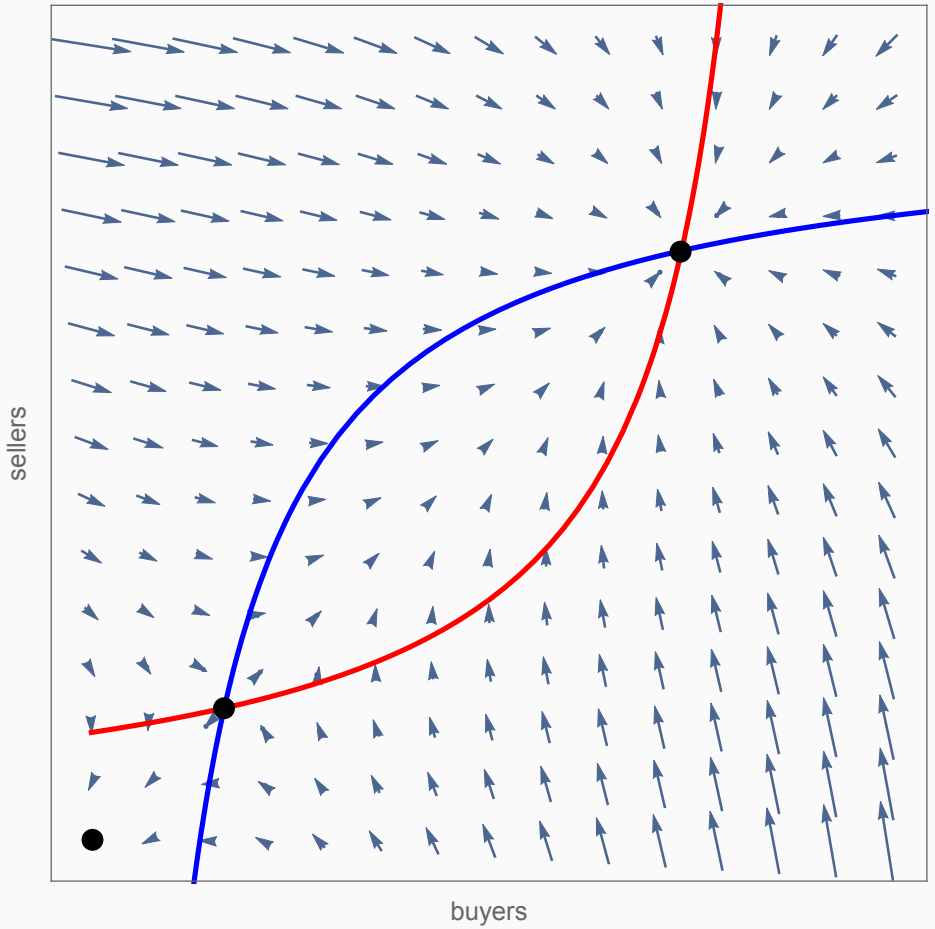

Figure. Indifference curves for buyers (red line) and sellers (blue line) with fixed prices. Pricing on each side affects demand on that side, but also on the other sides through externalities.

Other considerations: Properties of good market design

1. Provide *thickness*
   - Attract a sufficient proportion of potential market participants to come together ready to transact with one another.
2. Overcome the *congestion* that thickness can bring
   - Ensure that market participants can consider enough alternative possible transactions to arrive at satisfactory ones.
3. Make it *safe* to participate in the market as simply as possible
   - As opposed to trading outside of the marketplace or engaging in strategic behavior.
4. Some markets can be *repugnant*: they should not exist.
5. *Experimentation* to diagnose and understand market failures and successes, and to communicate results to policy makers.

Source: Roth 2008.

Platform design – Thickness

Figure. Low number of shoppers at the newest shopping mall in Helsinki.

Figure: Uutisklubi.

Platform design – Thickness

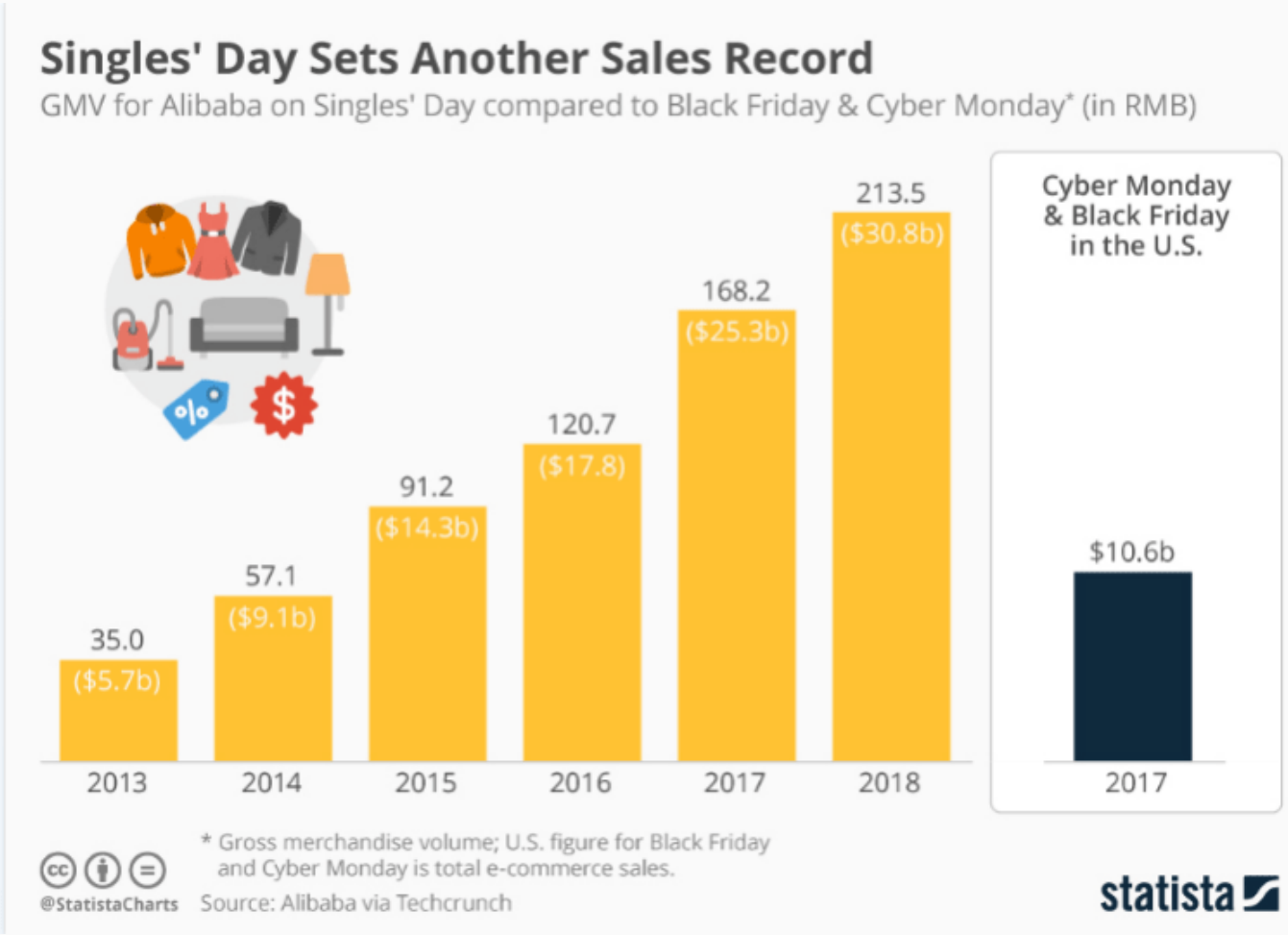

Figure. One day sales at Alibaba.

Figure: Medium.

Platform design – Thickness

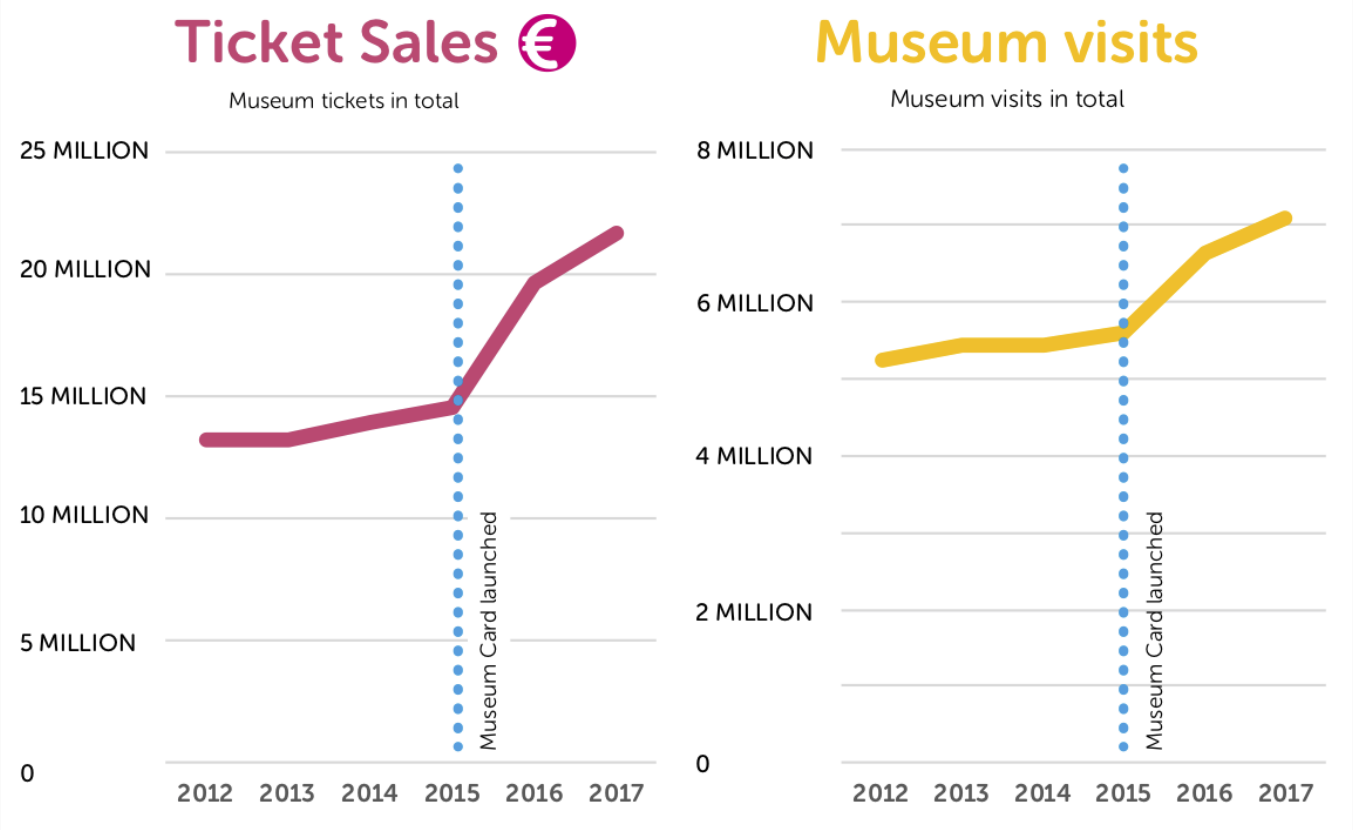

Figure. Museum Card was launched in 2015. The card currently is valid in 280 museums and has some 150,000 subscribers.

Source: Museum Card.

Platform design – Congestion

Figure. Opening of a new art museum in Helsinki led to continuously long lines. Access with Museum Card (Museokortti) is free.

Figure: Jouni Immonen / Yle.

Platform design – Congestion

Figure. Newest "smart" warehouse by Alibaba partner Cainiao uses e.g. Internet of Things, big data, edge computing and artificial intelligence.

Figure: Alizila (News from the Alibaba Group).

Platform design – Safe

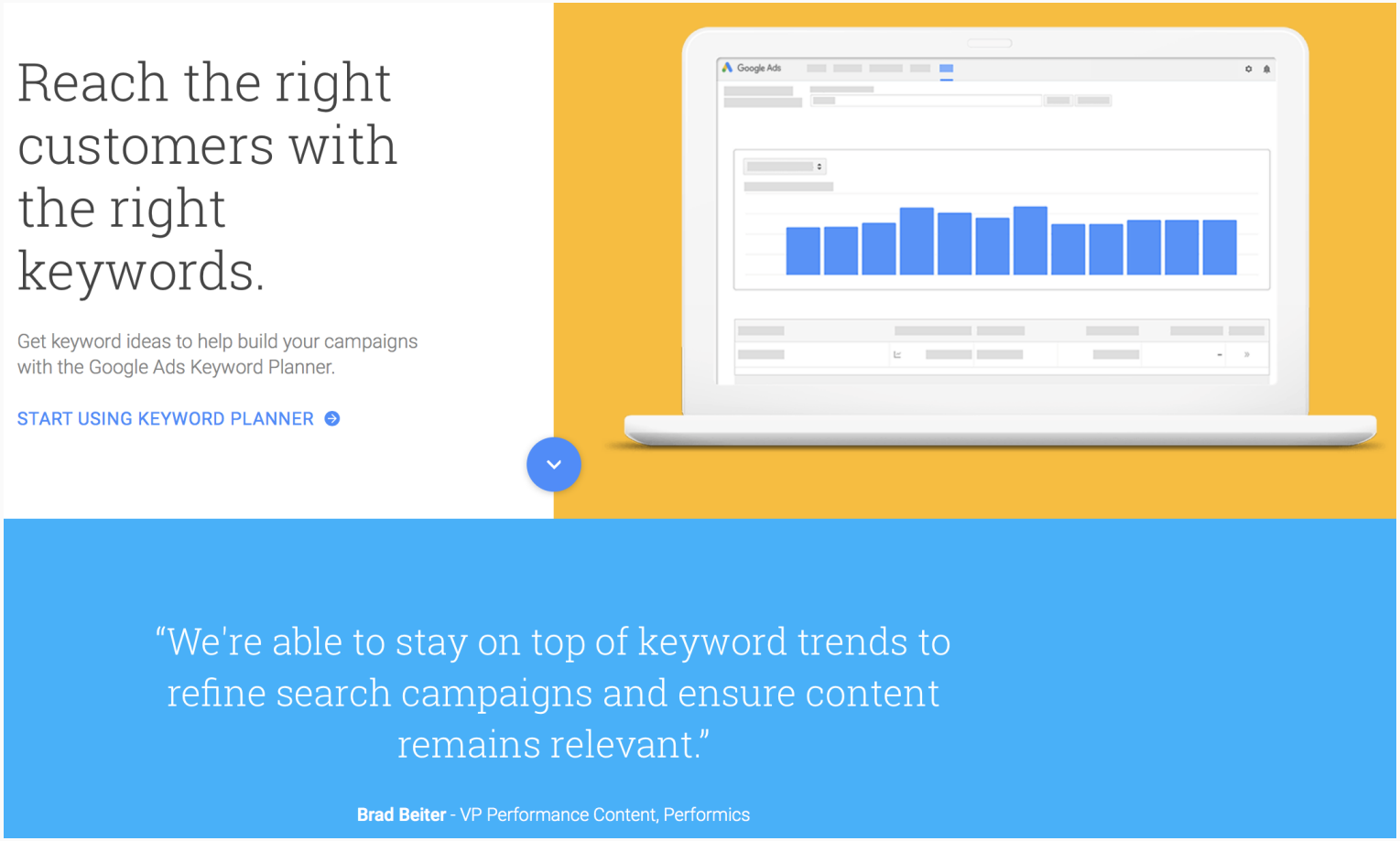

Figure. Example of the analytics tools offered to advertisers by Google.

Figure: Google.

Platform design – Repugnancy

COUNTRY	NAME	ALTERNATIVE NAME	SYMBOLS / SLOGANS	SYMBOLS / SLOGANS	SYMBOLS / SLOGANS
Indonesia	Front Jihad Islam	FJI			
Indonesia	Laskar Pembela Islam - LPI	Soldiers of the Defenders of Islam			
International	International Goyim Party	IGP			
Israel	Lehava	להבה			
Italy	Comunità Militante Dei Dodici Raggi, Do.Ra	Do.Ra.			
Italy	Lealtà - Azione				
Italy	MAB Manipolo D'avanguardia Bergamo	MAB			

Figure. Internal list of hate figures at Facebook. Moderators are expected to remove any post praising, supporting or representing any listed figure.

Source: New York Times.

Platform design – Experimentation

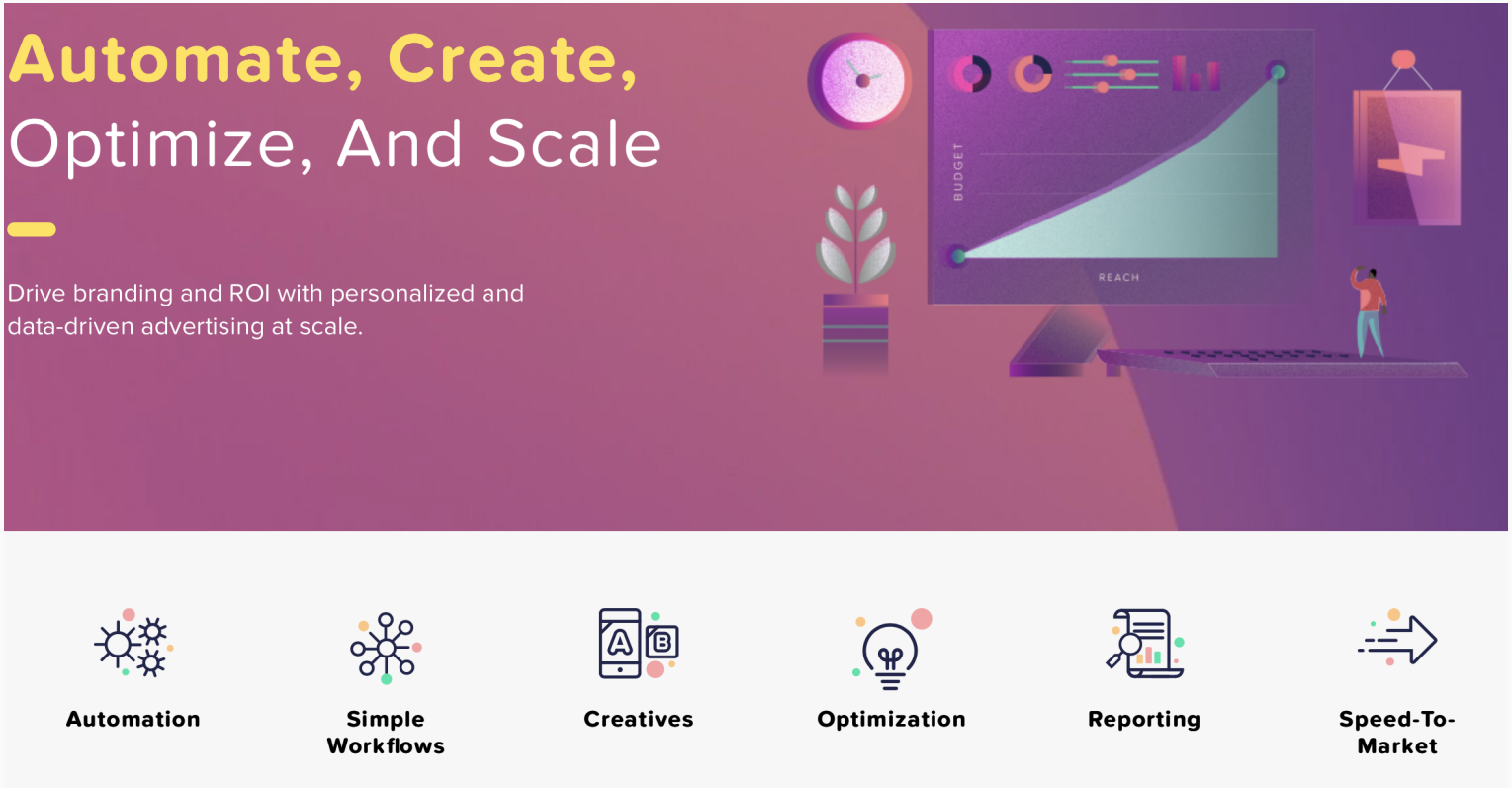

Figure. Data and algorithms provide a method to continuously optimize online advertisements.

Figure: Smartly.io.

Summary of platform design

- Openness
  - Decide the sides on the platform.
  - Decide compatibility with others.
- Pricing
  - Set pricing an all sides of the platform.
  - Take into account the externalities that a change in demand on one side causes in the other sides.
- Other considerations
  - Thickness, congestion, safe, repugnancy, experimentation.
- From a societal point of view also
  - Efficiency, consumer protection, market power, externalities.
  - More on regulating these in lecture 12.

Sharing economy

Figure. BlaBlaCar connects people driving from A to B with passengers looking for rides.

Figure: BlaBlaCar.

Sharing economy

- Sharing economy or peer-to-peer markets increase efficiency of the use of durable goods or labor.
- Success based on new technologies, but also experience from market design.
- Sharing economy platforms solve frictions between the parties.

Peer-to-peer or “sharing economy”

- In traditional rental markets, owners hold assets to rent them out in a professional capacity.
- Sharing economy has introduced a new kind of rental market, in which owners sometimes use their assets for personal consumption and sometimes rent them out.
- Such markets are referred to as peer-to-peer or sharing economy markets.

Sharing economy provides flexibility

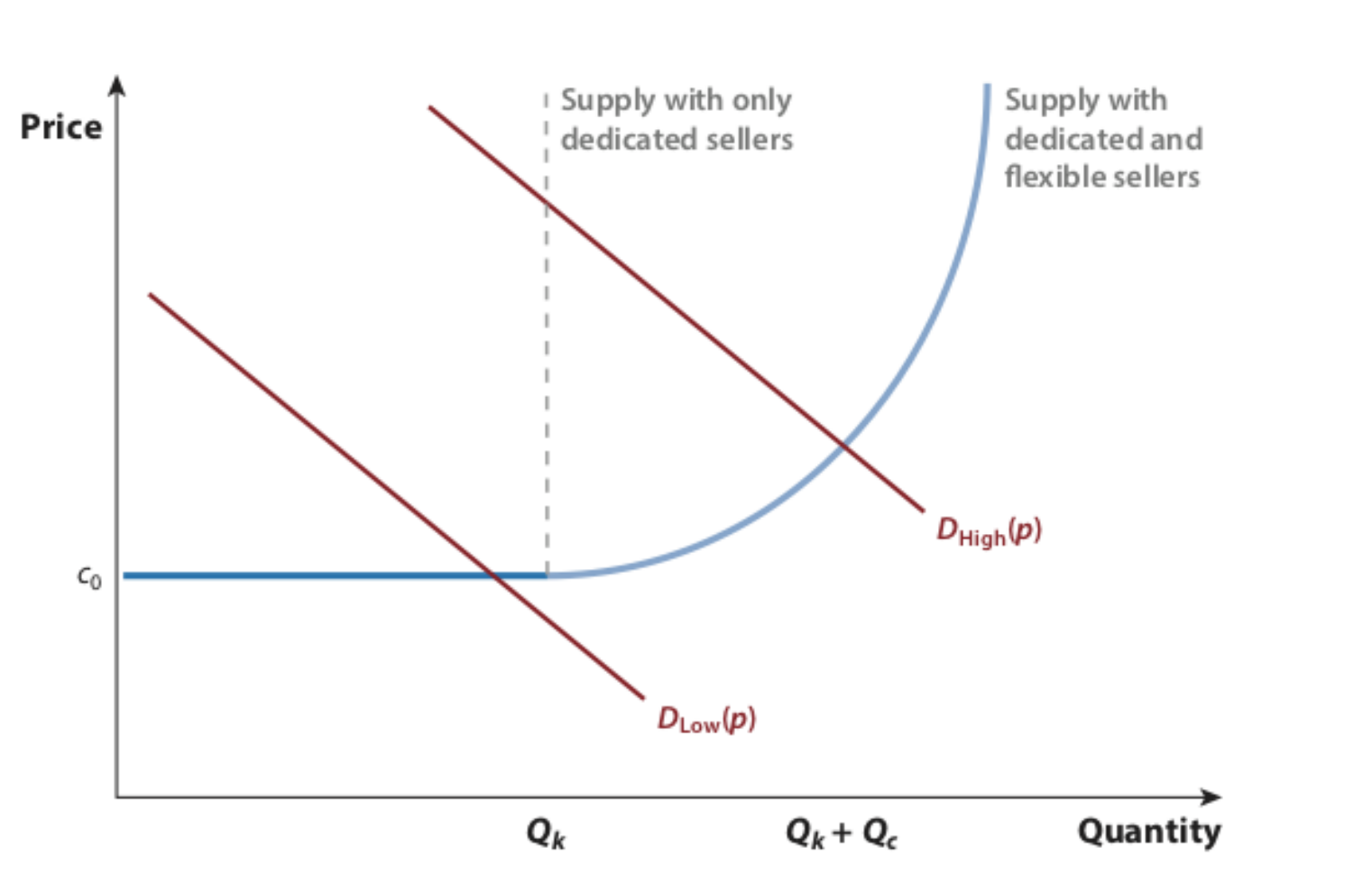

Figure. Sharing economy can increase capacity in traditional businesses.

Source: Einav et al. 2016.

Examples of P2P markets

- Accommodations (Airbnb, Uniplaces).
- Babysitting (Care.com)
- Computer programming (Upwork, Freelancer).
- Consumer loans (Prosper, Lending Club).
- Crafts (Etsy).
- Currency exchange (TransferWise, CurrencyFair).
- Deliveries (Foodora, Instacart, Postmates, Wolt).
- Household tasks (TaskRabbit, Handy),
- Local goods and services (Craigslist).
- Rides (Uber, Lyft, BlaBlaCar).
- Start-up financing (Kickstarter).

Source: Einav et al. 2016.

P2P market design

- P2P markets require efficient search and matching algorithms and platform pricing.
  - cf. Lectures 7 & 10: Online market & Strategies of platforms
- But recommender systems and reputation systems are central to P2P rental markets. Consider e.g. Airbnb:
  - If apartment posters would be afraid to accept strangers to their home or apartment seekers would be afraid to go strange persons' homes, the platform would not exist.
  - Feedback on the quality of apartments and visitors establishes trust to individual participants and the system as a whole.
- In the words of Joe Gebbia, co-founder of Airbnb, "a crucial element of success of this platform is designing trust".

Sharing economy compared to traditional business

- Effects of the removal of a professional third party owner:
  - Greater risk that the provider may fail to deliver.
  - The product will not be of the quality expected.
  - Safety may be a cause for concern.
  - The buyer may not pay.
  - Limited practical recourse after a transaction.
- The question for the sellers is how to signal their quality?
  - Note that the sellers own concerns need also to be accounted for by the platform, e.g. through insurance.

Remember this guy?

Figure. Earl Munz.

Figure: CBS Television.

Reviews

- In addition to information asymmetries, the offering is not standardized (taxi vs. Uber, known hotel brand vs. Airbnb), and can be complex (e.g. coding services).
- Reviews are a natural response to each of these problems:
  - Describe the performance of a transaction counterpart, a user can alert others to what went right and what went wrong.
  - Simultaneously improving future matches and penalizing bad behavior.

Reviews: Airbnb experience

- Consider a two-sided review mechanism, used early on in Airbnb, where the other side gives the review first.
  - If the review is negative, then reply is likely to be negative.
  - If the review is positive, then reply is likely to be positive.
- The dominant strategy for the first reviewer was to give a positive review if she/he wanted a positive review in return.
- Overall, the reviews became too positively biased.
  - Observed also earlier, e.g. on eBay.
- As a result, Airbnb adjusted their review system so that reviews to parties are revealed only after both have been written (or after some time).
  - Alleviates but does not remove the problem.

Reviews

Review process has other complications as well:

- At the start, no reviews are available.
  - Reviews can't assist the first users of the platform.
  - Can't help matching with a rookie or a new product.
  - Invite free-riding: why be the first to try out?
- User reviewed unfavorably might decide to start over.
- Users who submit reviews might differ systematically from normal users, by selection or by collusion.
  - Targets of the reviews have an incentive to inflate their ratings.
  - Remember the phantom packages?

Source: Edelman 2017.

Other mechanisms to build trust

- Large volume of transactions makes the monitoring of feedback manually inefficient.
- AI algorithms may help to automatize such tasks, for example
  - Assess the quality of sellers by analyzing the communication between the buyers and the sellers.
  - Create a market for feedback by automatic ranking the informativeness of user feedback.
- Platforms can also add other information to reduce the need for reviews
  - Conduct their own verifications.
  - Collect and publish other information.

Source: Milgrom and Tadelis 2018.

Externalities – Discrimination

- To increase trust, many platforms encourage users to provide personal profiles and even to post pictures of themselves.
- These features may facilitate discrimination based on sellers' race, gender, age, or other aspects of appearance, e.g.
  - Non-black hosts charge ca. 12% more than black hosts for the equivalent rental on Airbnb in NYC (Edelman and Luca 2014).
  - Gender wage gap on a freelance labor online platform (Barzilay and Ben-David, 2017).
  - Minority males set lower prices at the beginning of their career on Blablacar platform (Lambin and Palikot 2017).

Externalities – Discrimination

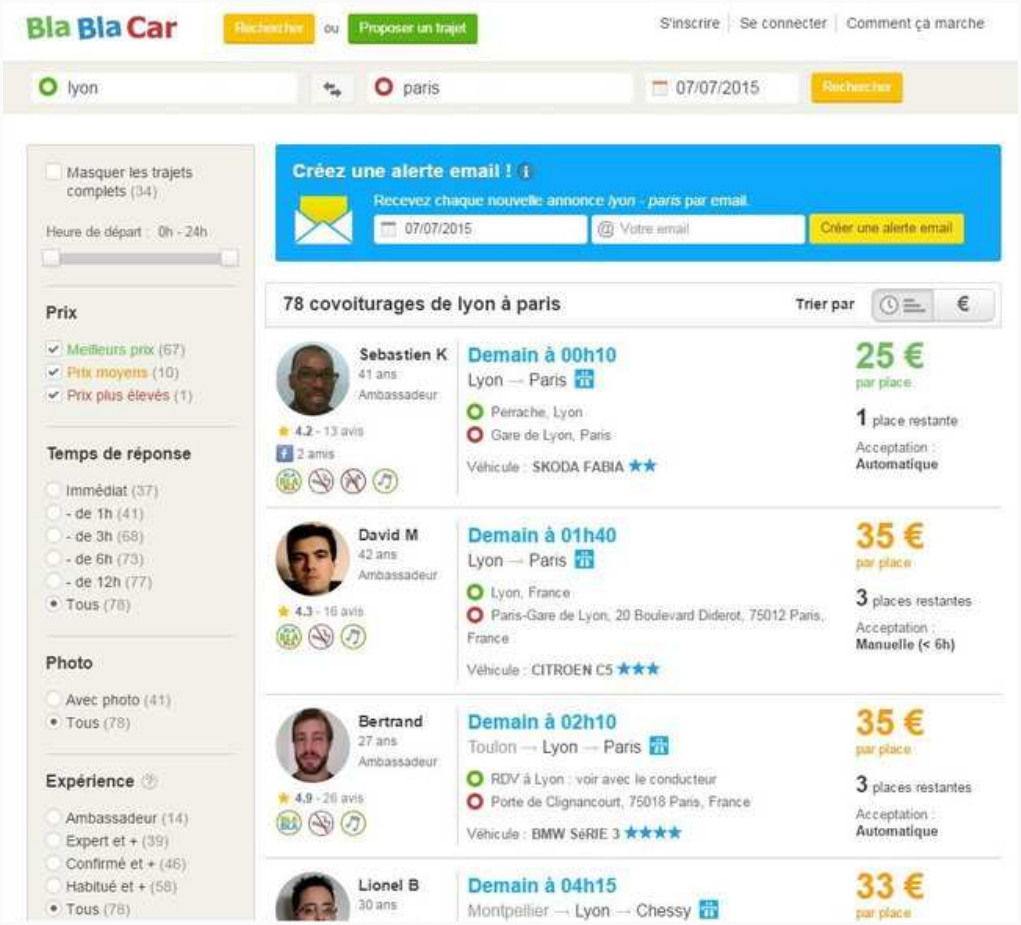

Figure. Example of pricing on BlaBlaCar.

Figure: Farajallah et al. 2016.

Externalities – Discrimination

- Building trust without discrimination can be challenging:
  - Informational asymmetries need to be solved.
  - Hard to pick the proper signal.
- To reduce gender bias, symphony orchestras have started to arrange blind auditions:
  - In 1952, the Boston Symphony conducted an experiment with a series of blind auditions.
  - To their surprise, their initial audition results still skewed male.
  - Then they asked the musicians to take off their shoes. The reason? The sound of the women's heels as they entered the audition unknowingly influenced the referees.

Externalities – Labor

- Gig economy platforms typically try not to have employees, but contract their workers as self-employed.
  - Workers are outside the normal labor law protections.
  - Status has been challenged in the courts of many jurisdictions.
- Algorithms that control the worker hours and pay bring efficiency to the users, but are insensitive to workers.
- Workers with no office and no knowledge on their colleagues may find it hard to organize.
  - Bargaining power more in the hands of the platforms.

Externalities – Labor

Figure. UberEats workers arranged a strike by ordering pizzas via Uber.

Figure: Mark Kerrison / Alamy.

Externalities – Social

- The possibility to rent out assets may lead to increase in consumer purchase of such assets.
  - Increase in car ownership to rent them out (e.g. NYC, Fraiberger & Sundararajan 2017).
  - Professional landlords switch to Airbnb.
- Additional demand may cause unexpected externalities
  - Increased apartment prices, together with preference of short-term over long-term rentals, leads to more congested housing market.
  - Regulatory backslash in many places, e.g. "Zweckentfremdungsverbot" in Berlin in 2016.

Externalities – Social

- Change from long-term rentals to short-term stays causes externalities to the neighbors.
  - Long-term tenants have incentives to limit the externalities to their neighbors.
  - Short-term tenants may be less sensitive.
  - Unlikely that bargaining is feasible.
  - Traditionally zonal planning protects housing.
- The efficiency of allocation will depend on who decides whether short-term rentals are allowed or not:
  - Individual tenants: too much hosting.
  - Cities: too little hosting.
  - Building owners: optimal level of hosting.

Source: Filippas and Horton 2017.

Externalities – Environment

- Increase in ride-hailing may increase traffic (Henao et al. 2018).
- Vehicle miles traveled increased mainly due to two factors:
  - Additional empty miles from ride-hailing drivers going around without passengers.
  - Ride-hailing substituting more efficient and sustainable modes such as transit, biking and walking.
- Autonomous vehicles could also increase congestion (Millard-Ball 2019)
  - Cruising around is cheaper than parking, and cruising is less costly at low speeds.
  - In simulations, autonomous vehicles can implicitly coordinate to reduce the cost of cruising for parking, through self-generated congestion.

Externalities – Environment

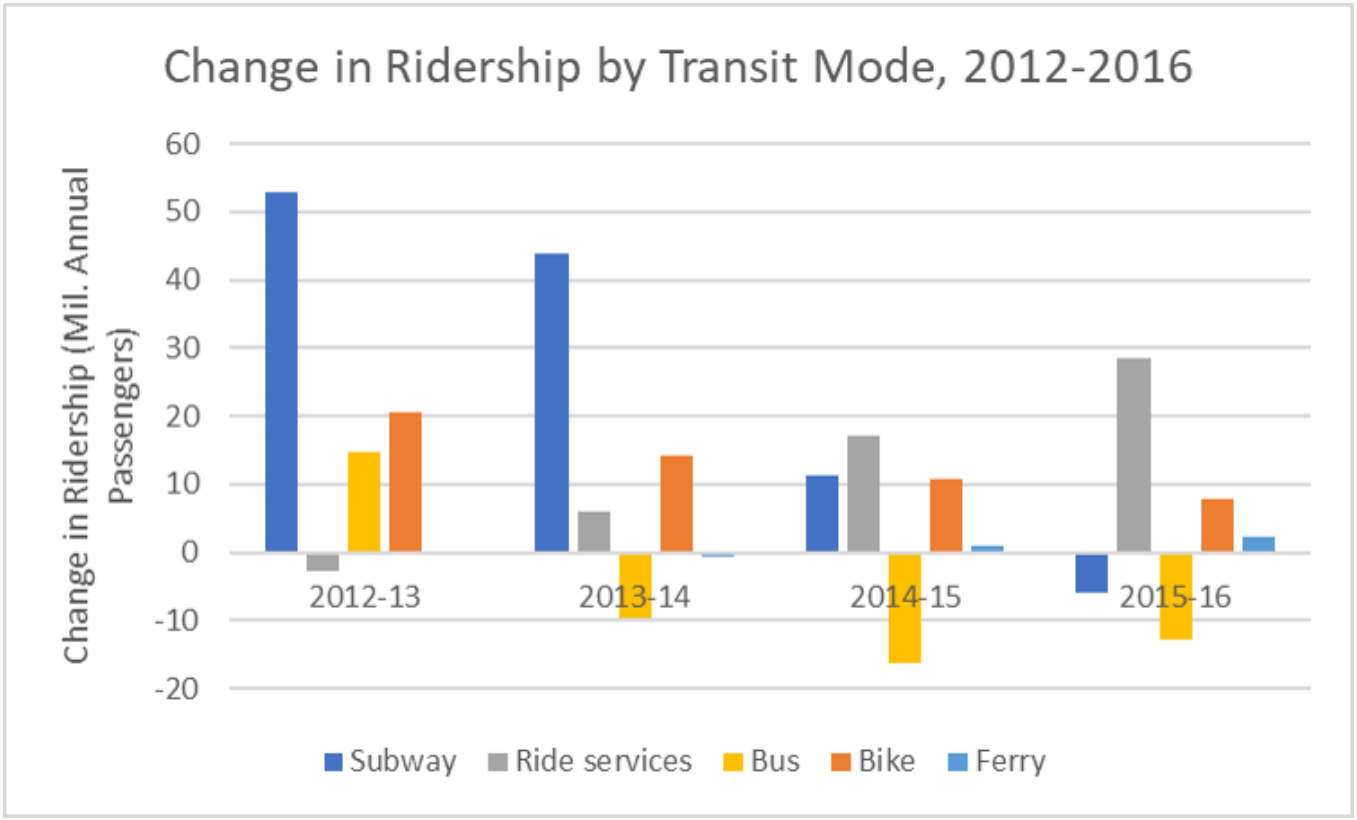

Figure. Transportation mode change in New York City.

Figure: NYCEDC.

Regulation of externalities

- Critics charge that the primary competitive advantage of P2P platforms is their ability to duck costly regulations that protect third parties.
- Rules and regulation in place for traditional businesses to protect consumers and limit externalities:
  - For example, environmental regulation, consumer protection law, copyright law, health and safety laws, labor laws etc.
- Conflicts when non-traditional business models make rights and compliance requirements of the platforms participants unclear.

Course feedback

> At the end of the course the student has learned how to use the tools of economic analysis to analyze firm decisions and strategies, and competition in online and digital markets. The student has learned how the special features of such markets affect the strategic decisions. A key objective is to introduce the students to applications of game theory and mechanism design by connecting these tools to practical applications.

Learnings today

- Platform design choices have real world implications.
- Sharing economy can increase economic efficiency, but does not magically solve old externalities.
- Establishing trust is essential for sharing economy transactions; implementation through reviews or other means complex.

Readings for this lecture

- Luca, M. 2016. Designing Online Marketplaces: Trust and Reputation Mechanisms. Harvard Business School Working Paper. No. 17-017.
  - Light read on reviews (also, a working paper so some rough edges).
  - Connects the discussion on this lecture to online market design.
  - Raises the fact that externalities (in this case discrimination) are a result of the platform design choices.

Exercises for Lectures 10–12

Note! To enable short discussion on the model answers on Thursday 14 Feb lecture, the strict deadline for the assignments is on Thursday 14 Feb by noon.

1. Consider the ad market that Google is running.
   (a) Explain why search is free in Google but advertisers are charged.
   (b) Why so many advertisers want to have their ads on Google?
2. List 5 reasons why you think Alibaba has been so successful. (You can compare this to the list on Amazon that you did in the very first assignment set). No need for long answers.
3. Why do you think trust is particularly important in peer-to-peer markets?
4. Consider the regulation of data in an online environment.
   (a) List 3 regulatory concerns.
   (b) Who should be responsible of the regulation? Motivate shortly.

Next time

Regulation

- Regulation
- Big data
- Property rights
- Market power