

Economics of Strategy for Online and Digital Markets

Topics in Economic Theory and Policy, 31C01000

Iivo Vehviläinen

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Aalto University

iivo.vehvilainen@aalto.fi

Lecture 12: Regulation



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joyoftech.com

- Regulation
- Big data
- Property rights
- Market power
- Exam

Regulatory concerns

- Typical motivations for regulation are the limitation of market power, consumer protection and externalities.
- In the context of online and digital markets some of the key concerns are:
 - Privacy: Data collection and use.
 - Market power: Leads to efficiency loss.
 - Collusion: Same, algorithmic collusion a new phenomena.
 - Equality: Discrimination (cf. lecture 11).
 - Externalities, time use (+cf. lecture 11).
 - IPR: Ownership of digital content.
- Big data and algorithms that process data are relatively new phenomena, that could warrant caution to limit unforeseen misuses.

Overall gain from online shopping to consumers

- Variety gain:
 - Online retailers are less constrained by physical space, they can offer a wider variety of products.
 - E-commerce also enables consumers to access stores that do not have a physical location near them.
- Convenience gain:
 - Consumers can purchase a product online that they may have previously purchased at a brick-and-mortar store without making a physical trip.
- Share of online trade in the U.S. reached 10 % of in 2017.

Also possible to decide *not* to regulate despite concerns:

- Need to consider how regulation can be implemented and what the cost of regulation to consumers will be.
- Benefits of online markets and other platforms can be large enough to compensate for the costs and risks.
- Rapid development of new innovations may be unnecessarily hampered with too stringent or early regulation.
- Private regulation by the companies themselves purely on market based incentives (e.g. Amazon year 2000 DVD case) may be sufficient.

Watching random video game from Twitch.

- Ownership of physical things is most often clearly defined (in our times and parts of the world).
- Such clarity is missing online and with digital content.
- Copyright laws offer some guidance:
 - Copyright protects original works of authorship, e.g. literary, dramatic, musical, and artistic works, including movies, songs, and computer software.
 - But fair use clauses allow the use of copyrighted material in some circumstances.
- Copyright holder is entitled to the earnings created by the use of the protected work.
 - Who is entitled to the ad revenue from video gameplay in Twitch or remix in YouTube?

Property rights and liability laws

- *Coase Theorem* states that negotiation and trade always lead to an efficient allocation if
 1. Property rights are well defined.
 2. Transaction costs are negligible.
- It may be optimal to share some of the content for free to increase consumer awareness (Mustonen 2019).
 - Publishers less eager to enforce their rights.
- But because of transaction costs, a need to balance:
 - Relying on the assignment of property rights and markets.
 - Setting liabilities with regulation and rules.
- The old institutions governing copyright are clearly stretched by these online phenomena.

“ “ Big data and privacy. . . represents one of
biggest challenges to our society, and to com-
petition law and consumer protection.
–J. Stiglitz, 2018. ” ”

What are the concerns on data?

Example – Facebook in the news in 2018:

- An indictment of Russians who hacked Facebook.
- Facebook's role in Myanmar's tragedy.
- The mess that Cambridge Analytica made.
- Thousands of Facebook ads for which Russia paid.
- Details of undisclosed deals with device makers (e.g. Huawei).
- Info about an Iranian network of frauds and fakers.
- A report about Facebook's tools for gender discrimination.
- A massive data breach of 50m users' information.
- A confession they lied about video advertising metrics and terms.
- A report Facebook weaponized opposition research firms.
- A report that 6.8m users' photos were stolen by strangers.
- Facebook shared personal info with partners despite the dangers.

- Individuals often don't know the value of data that they are giving to companies ...
 - American companies alone are expected to spend close to \$20 billion by the end of 2018 to acquire and process consumer data (NYT 18 Dec 2018).
 - Sales of location-targeted advertising reaching an estimated \$21 billion in the U.S. in 2018 (NYT 10 Dec 2018).
- ...or even that their data is being taken
 - Reading the privacy policies an average American encounters in a year would take 76 work days. (McDonald and Cranor 2008).
 - And there can be data breaches, by malignant third parties or the companies themselves.

Big data and privacy



Figure. Example of mobile phone location data in New York City.

Figure: NYT 10 Dec 2018.

Big data and price discrimination

- Data provides new tools for price discrimination and product steering (cf. lecture 7 – Online markets).
- There may be returns to scale in data
 - Firms with more data have a competitive advantage and can grow.
 - Not necessarily firms that are more otherwise more efficient.
- In some cases, there may be social value in the data; in many other cases, data is being used to extract more consumer surplus out of buyers.

- Big data together with efficient algorithms leads to high level of selection:
 - The purpose is to offer user specific content that will lead to more business.
 - This can be a purchase decision, click on a ad or more time spent on the platform.
- Algorithmic externalities
 - The content provided may be divisive.
 - Many social media apps use habit-forming technologies: infinite scroll, constant updates, likes etc. These may result in excessive use and addictions.

Use of user data has also societal benefits:

- Service provision can be made more efficient:
 - Data can be used to present relevant content (e.g. Google).
 - More accurate demand predictions may lead to lower costs of logistics, lower waste etc.
- Advertisement supported content benefits from big data
 - Ads can be targeted with greater accuracy, reducing mismatches and the costs on both sides.
 - Can be argued that similar to targeting by e.g. viewer groups or by the magazine a reader chooses.
 - Advertisement income enables “free” services (e.g. Facebook).

Market power – Google

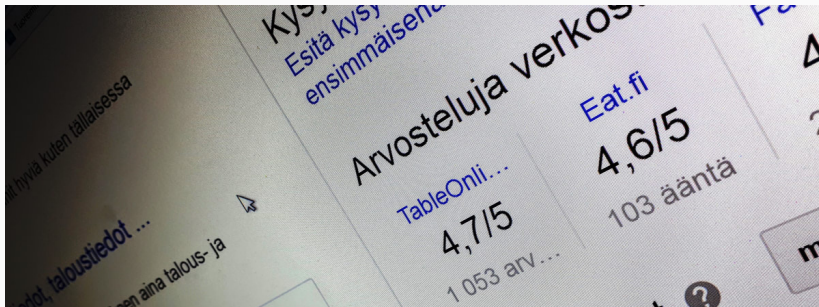


Figure. Example of how Google uses third party data directly on their user search webpage (Yle News 12 Oct 2018).

Figure: Yle.

- Foundem.com was a vertical-search engine for finding cheap online prices, founded in 2006.
 - Foundem first came up high in Google's search results whenever people submitted price comparison queries.
 - After only a few days in operation, the traffic stopped.
 - Foundem site had moved down tens of pages in Google search results; and was forced out of the business.
- In 2017, Google was ordered to stop giving its own comparison-shopping service an illegal advantage and was fined €2.42 billion, the largest such penalty in the European Commission's history.

Market power – Google

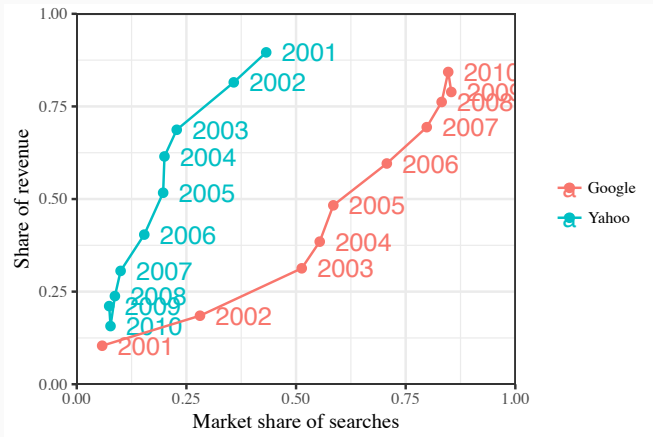


Figure. Development of the share of revenue (for the two) against the share of user searches (total market) for Google vs. Yahoo.

- What makes Google tricky for regulation is that the search engine is hugely effective.
- The original PageRank algorithm scaled up as internet grew:
 - The placement of a webpage in search results was based on how many links there were from other pages to it.
 - As the number of webpages grew, so did the links to “important” sites.
 - Traditional search engines, such as Yahoo, lacked similar mechanism which led to congestion of search results.
- The issue now is that the current Google search algorithm ranks results based on many other things.
 - Combination of algorithms and data, might be that even Google does not know any longer.

Market power – Google

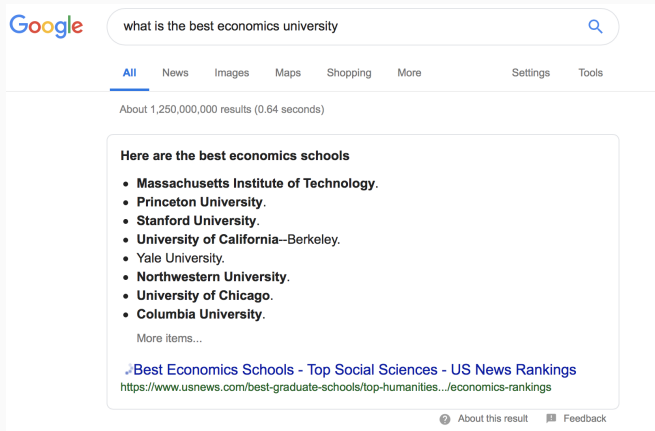


Figure. Example of the power of Google, search “what is the best economics university” in the U.S.

Top Universities for Economics in 2017

Top 10 Universities for Economics Worldwide Based on the QS World University Rankings by Subject 2017

Rank	Name of Institution	Location
3	Stanford University	US
4	University of California, Berkeley (UCB)	US
5	London School of Economics and Political Science (LSE)	United Kingdom

8 weitere Zeilen • 16.03.2017

 Top Universities for Economics in 2017 | Top Universities

<https://www.topuniversities.com/university.../university.../top-universities-economics-20...>



Informationen zu diesem Ergebnis



Feedback

Figure. Example of the power of Google, identical search “what is the best economics university” in Germany.

Market power – Amazon

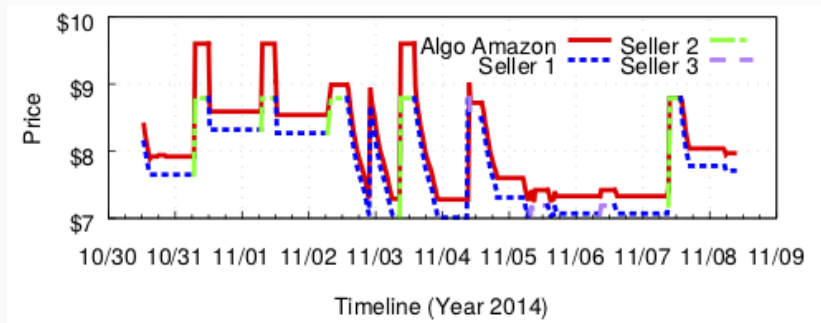


Figure. Example of Amazon keeping a premium over other sellers.

Source: Chen et al. 2016.

Market power – Amazon

The image is a screenshot of the Amazon website's search results for 'lightning cable'. The top navigation bar includes the Amazon logo, a search bar with 'lightning cable' entered, and a 'Valentine's Day Gift Shop' banner. Below the navigation bar, a message indicates '1-16 of over 10,000 results for "lightning cable"'. The left sidebar contains filters for 'Cell Phones & Accessories', 'Computers & Accessories', 'Electronics', and 'Refine by'. The main content area displays three sponsored product listings. The first listing is for 'Shop Lightning Cables from AmazonBasics' with a 'Shop now' link. The second listing is for 'AmazonBasics Double Braided Nylon Lightning to USB A Cable, Advanced Collection - MFi Certified iPhone Charger - Dark Grey, 10-Foot' with a price of \$15.99 and a 'Get it Thu, Feb 21 - Sat, Feb 23' delivery window. The third listing is for 'AmazonBasics Lightning to USB A Cable, Advanced Collection - MFi Certified iPhone Charger - Red, 4-Inch' with a price of \$15.99 and a 'Get it Thu, Feb 21 - Sat, Feb 23' delivery window. Each listing includes a product image, a star rating, and a 'prime' badge.

amazon

All lightning cable

Valentine's Day Gift Shop

Deliver to New York 10256

Your Amazon.com Today's Deals Gift Cards Whole Foods

EN Hello, Sign in Account & Lists Orders Try Prime Cart

1-16 of over 10,000 results for "lightning cable"

Sort by Featured

Show results for

Cell Phones & Accessories
Cell Phone Cables
Cell Phone Chargers & Power Adapters
Cell Phone Accessories
Cell Phone Car Chargers

Computers & Accessories
Lightning Cables
Computer Cables & Interconnects
USB Cables

Electronics
Audio & Video Cables & Interconnects

See All 17 Departments

Refine by

Subscribe & Save
☐ Subscribe & Save Eligible

Delivery Day
☐ Get It by Tomorrow

Amazon Prime
☐ prime

SPONSORED BY AMAZONBASICS

Shop Lightning Cables from AmazonBasics

Shop now

AmazonBasics Lightning to USB A Cable - MFi Certified iPhone ...

★★★★☆ 1,937

prime

AmazonBasics Nylon Braided Lightning to USB A Cable - MFi ...

★★★★☆ 9,526

prime

Ad feedback

Sponsored

AmazonBasics Double Braided Nylon Lightning to USB A Cable, Advanced Collection - MFi Certified iPhone Charger - Dark Grey, 10-Foot

by AmazonBasics

\$15.99

Get it Thu, Feb 21 - Sat, Feb 23

FREE Shipping on eligible orders

★★★★☆ 2,135

Sponsored

AmazonBasics Lightning to USB A Cable, Advanced Collection - MFi Certified iPhone Charger - Red, 4-Inch

by AmazonBasics

Figure. Example of Amazon search for “lightning cable”.

Market power – Amazon


Amazon Prime
☐ ✓prime

Eligible for Free Shipping
☐ Free Shipping by Amazon

Data Cable Interface
☐ Lightning
☐ Micro USB
☐ DVI
☐ USB
☐ Aux
☐ HDMI

Avg. Customer Review
★★★★★ & Up
★★★★★ & Up
★★★★★ & Up
★★★★★ & Up


Brand
☐ AmazonBasics
☐ Apple
☐ Anker
☐ SMALLElectric
☐ ONSON
☐ TNSO
☐ Aimus
☐ Everdigi
☐ YUNSONG
☐ QIANXIANG
☐ HokoAcc
☐ lightning Cable
☐ Lightning Cables
☐ DTLake
☐ AKEDRE




Sponsored ⓘ
AmazonBasics Lightning to USB A Cable, Advanced Collection - MFi Certified iPhone Charger - Red, 4-Inch
by AmazonBasics
\$7.99 ✓prime
Get it by Tue, Feb 12
FREE Shipping on eligible orders

★★★★★ 244


Top Rated from Our Brands [See more](#)



AmazonBasics
Our Brand ⓘ
AmazonBasics Nylon Braided Lightning to...
\$12.99 ✓prime
★★★★★ 9,526



AmazonBasics
Our Brand ⓘ
AmazonBasics Lightning to USB A Cable - ...
\$11.98 ✓prime
★★★★★ 1,920



AmazonBasics
Our Brand ⓘ
AmazonBasics Lightning to USB A Cable - ...
\$7.64 ✓prime
★★★★★ 1,925

Figure. Example of Amazon search for “lightning cable”.

Market power – Amazon

☐ All Time

Cell Phone Compatibility

- ☐ iPhone X
- ☐ iPhone 8
- ☐ iPhone 8 Plus
- ☐ iPhone 7
- ☐ iPhone 7 Plus
- ☐ iPhone 6/6S
- ☐ iPhone 6/6S Plus
- ☐ iPhone 5/5S/SE
- ☐ iPhone 5C
- ☐ Samsung Galaxy S 9
- ☐ Samsung Galaxy S 9 Plus
- ☐ Samsung Galaxy S 8
- ☐ Samsung Galaxy S 8 Plus
- ☐ Samsung Galaxy S 7
- ☐ Samsung Galaxy S 7 Edge
- ☐ Samsung Galaxy S 6
- ☐ Samsung Galaxy S 6 Edge
- ☐ Samsung Galaxy S 5


Cable & Interconnect Length

- ☐ Under 4 Feet
- ☐ 4 to 5.9 Feet
- ☐ 6 to 7.9 Feet
- ☐ 8 to 9.9 Feet
- ☐ 10 to 14.9 Feet
- ☐ 15 to 24.9 Feet
- ☐ 25 Feet & Above


Cable Color

Cable Length


- ☐ Under 4 Feet
- ☐ 4 to 5.9 Feet
- ☐ 6 to 7.9 Feet

Amazon's Choice


AmazonBasics Nylon Braided Lightning to USB A Cable - MFi Certified iPhone Charger - Dark Grey, 6-Foot
by AmazonBasics
\$12.99
Get it by **Tue, Feb 12**
FREE Shipping on eligible orders
More Buying Choices
\$12.08 (4 used offers)


 9,526

Product Features
... Lightning and USB ends to improve durability and reduce fraying; Cables ...




AmazonBasics Lightning to USB A Cable - MFi Certified iPhone Charger - White, 3-Foot, 2-Pack
by AmazonBasics
\$11.98
Get it by **Tue, Feb 12**
FREE Shipping on eligible orders
More Buying Choices
\$8.99 (6 used offers)

 1,920



iPhone Charger, Anker Powerline 6ft Lightning Cable, MFi Certified for iPhone Xs/Xs Max/XR/X / 8/8 Plus / 7/7 Plus / 6/6 Plus / 5s / iPad, and More (White)
by Anker
\$8.99 ~~\$10.99~~
Get it by **Tue, Feb 12**
FREE Shipping on eligible orders
More Buying Choices
\$8.81 (1 used offer)
[See newer version](#)

 4,231

Product Features
... Six feet of cable give you the ... PowerLine Lightning, Hook and ...

Figure. Example of Amazon search for “lightning cable”.

- Are the companies too big and powerful?
- Competition can still provide a remedy:
 - In 2008 Von Blanckenburg and Michaelis suggest that regulation of eBay is necessary, because “even in the longer term there will probably be no competition in their market”.
 - Obviously, in 5 years or so, Amazon surpassed eBay’s revenues.
- Lack of regulatory options:
 - E.g. how to split up the companies to enhance competition?

- Algorithmic pricing might contribute to overt collusion or facilitate tacit collusion.
 - Coordination between pricing algorithms leads to lower competition and higher prices.
 - Algorithms can match rival's discount instantaneously and eliminate incentives to discount.
- Sophisticated price discrimination may lead to narrower relevant product markets.
 - Implications e.g. to merger control.

Collusion – Algorithm pricing

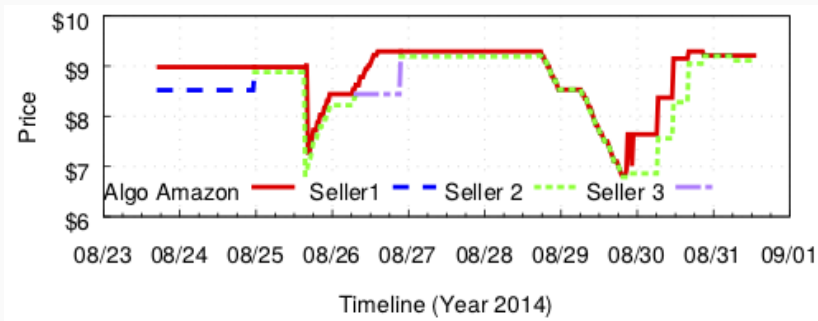


Figure. Example of Amazon matching the lowest seller.

Source: Chen et al. 2016.

- The complexity of platform economics, data and algorithms makes the regulatory challenges complex.
- European Union's General Data Protection Regulation (GDPR) is along the lines of J. Stiglitz:
 - "There needs to be far stronger regulation on individual privacy and the transparency of those who acquire data, on combining data sets, on the uses to which data can be put."
- Global firms often operate beyond the reach of national regulators, leading to calls on global regulation:
 - Japan to propose "the creation of a framework for discussing global data governance at the G20 summit to be held in Osaka in June 2019". (NHK news 23 Jan 2019)

“ There are two kinds of games in economics. One is the game where people use only legal moves. Then there is the true game, the one like real life, where the strategies and moves people make, some of them contain illegal gains. So you take into account when you write the rules of the game that the players will try to cheat. –Leonid Hurwicz.

”

- Motivations for regulation are the limitation of market power, consumer protection (privacy, discrimination) and negative externalities (social, environment).
- Sufficiency of private regulation and the lack of guaranteed regulatory options makes the regulators cautious.
- Online, big data, the concentration of users, and the lack of transparency in what algorithms are doing, are the largest sources of concern.

- Demange, G. (2018) “Mechanisms in a Digitalized World”, CESifo Working papers.
 - Lighter read and a working paper so some rough edges.

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.