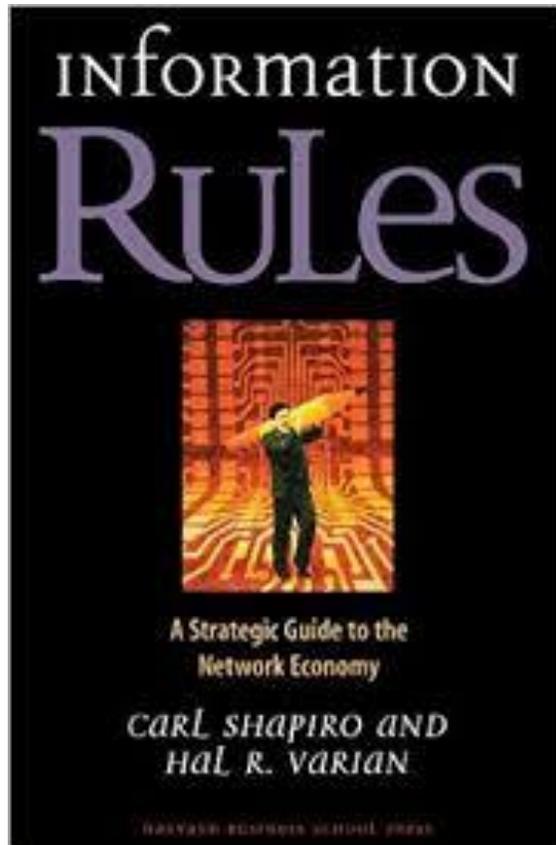


What the Tech?!

Tommaso Valletti

Imperial College London
University of Rome Tor Vergata

Digital markets (1999)



- A promise:
- - *Multi-homing*
- - *Seamless hopping*
- - *Rational search*
- - *Low transaction costs*
- - *Information*
- - *Dynamism*
- - *Democracy!*

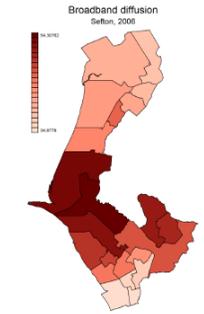
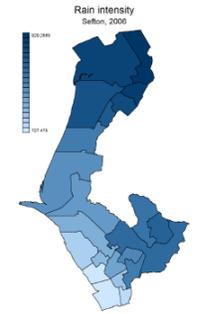
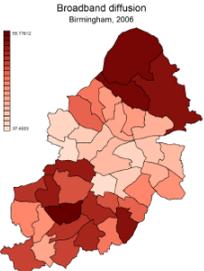
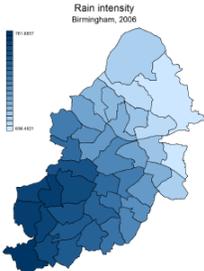
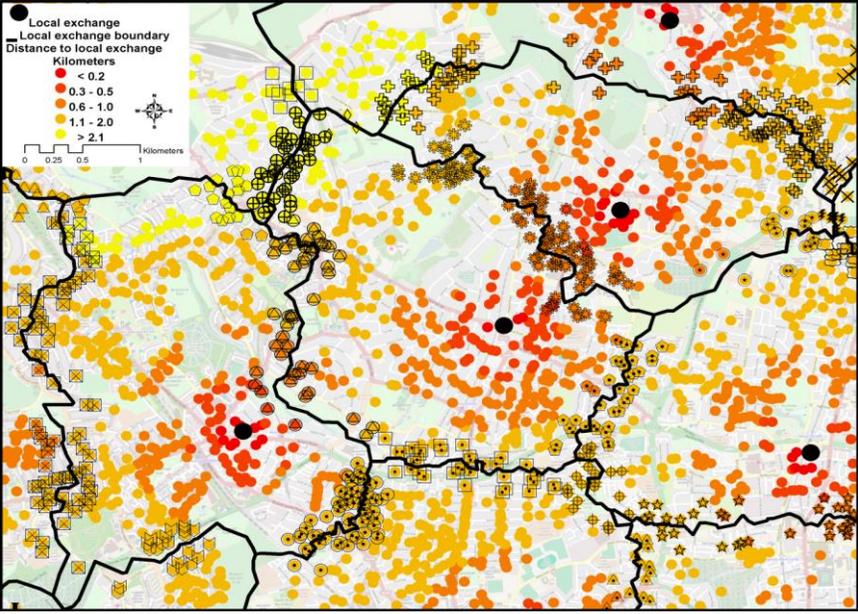
Study

- Markets and their failures

- Mostly theory

$$\begin{aligned}
 \hat{\pi}_i = \alpha_i & \left\{ (1-G(\hat{\varepsilon}_i))(1-G(\hat{\varepsilon}_j))\psi(\hat{p}_i, \hat{p}_j) + (1-G(\hat{\varepsilon}_j)) \int_{\hat{\varepsilon}_i}^{\bar{\varepsilon}} \varepsilon_i Q^{ji}(\hat{p}_i, \hat{p}_j) g(\varepsilon_i) d\varepsilon_i - \right. \\
 & (1-G(\hat{\varepsilon}_i)) \int_{\hat{\varepsilon}_j}^{\bar{\varepsilon}} \varepsilon_j Q^{ij}(\hat{p}_i, \hat{p}_j) g(\varepsilon_j) d\varepsilon_j + (1-G(\hat{\varepsilon}_j)) \int_{\underline{\varepsilon}}^{\hat{\varepsilon}_i} \psi(\hat{p}_i, \hat{r}_i - \varepsilon_i) g(\varepsilon_i) d\varepsilon_i + \\
 & (1-G(\hat{\varepsilon}_j)) \int_{\underline{\varepsilon}}^{\hat{\varepsilon}_i} \varepsilon_i Q^{ji}(\hat{r}_i - \varepsilon_i, \hat{p}_i) g(\varepsilon_i) d\varepsilon_i - G(\hat{\varepsilon}_i) \int_{\hat{\varepsilon}_j}^{\bar{\varepsilon}} \varepsilon_j Q^{ij}(\hat{p}_i, \hat{r}_i - \varepsilon_i) g(\varepsilon_j) d\varepsilon_j + \\
 & (1-G(\hat{\varepsilon}_i)) \int_{\underline{\varepsilon}}^{\hat{\varepsilon}_j} \psi(\hat{r}_j - \varepsilon_j, \hat{p}_j) g(\varepsilon_j) d\varepsilon_j + G(\hat{\varepsilon}_j) \int_{\hat{\varepsilon}_i}^{\bar{\varepsilon}} \varepsilon_i Q^{ji}(\hat{p}_j, \hat{r}_j - \varepsilon_j) g(\varepsilon_i) d\varepsilon_i - \\
 & (1-G(\hat{\varepsilon}_i)) \int_{\underline{\varepsilon}}^{\hat{\varepsilon}_j} \varepsilon_j Q^{ij}(\hat{r}_j - \varepsilon_j, \hat{p}_j) g(\varepsilon_j) d\varepsilon_j + \int_{\underline{\varepsilon}}^{\hat{\varepsilon}_i} \int_{\underline{\varepsilon}}^{\hat{\varepsilon}_j} \psi(\hat{r}_j - \varepsilon_j, \hat{r}_i - \varepsilon_i) g(\varepsilon_i) g(\varepsilon_j) d\varepsilon_i d\varepsilon_j + \\
 & \left. \int_{\underline{\varepsilon}}^{\hat{\varepsilon}_i} \int_{\underline{\varepsilon}}^{\hat{\varepsilon}_j} \varepsilon_i Q^{ji}(\hat{r}_i - \varepsilon_i, \hat{r}_j - \varepsilon_j) g(\varepsilon_i) g(\varepsilon_j) d\varepsilon_i d\varepsilon_j - \int_{\underline{\varepsilon}}^{\hat{\varepsilon}_i} \int_{\underline{\varepsilon}}^{\hat{\varepsilon}_j} \varepsilon_j Q^{ij}(\hat{r}_j - \varepsilon_j, \hat{r}_i - \varepsilon_i) g(\varepsilon_i) g(\varepsilon_j) d\varepsilon_i d\varepsilon_j \right\}
 \end{aligned}$$

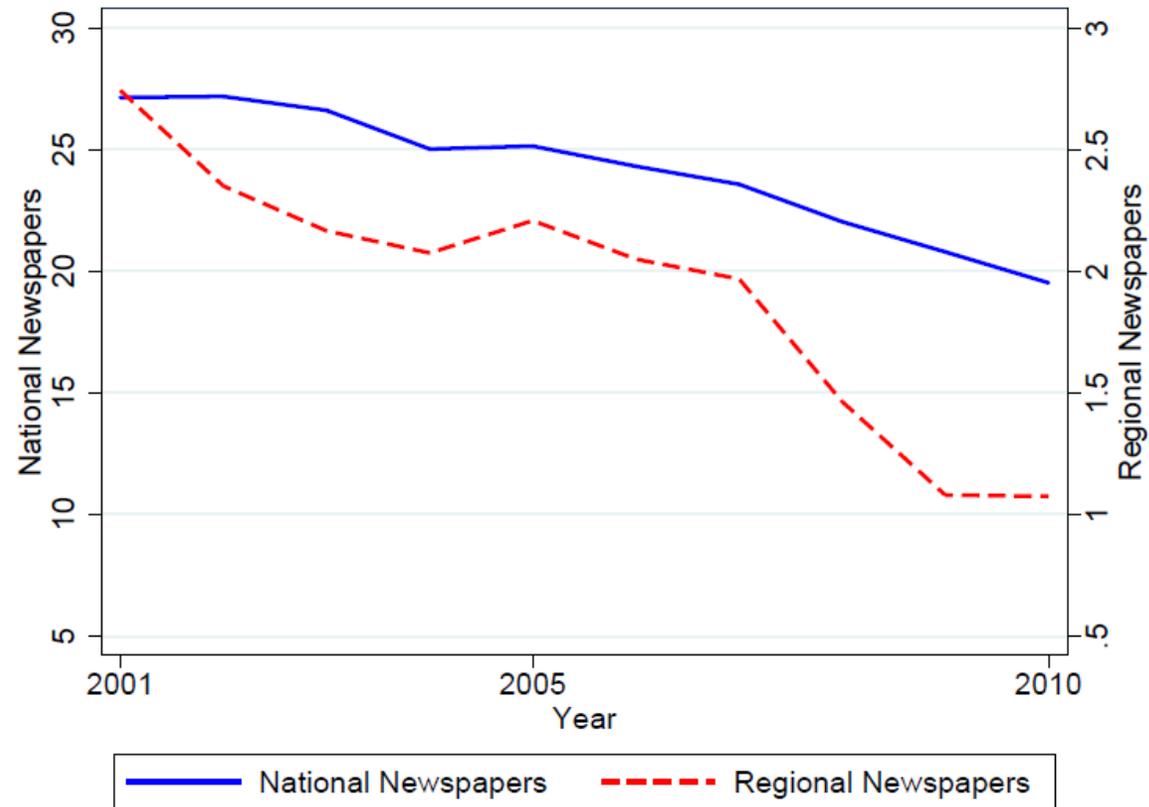
Trying to get some data



Having doubts



- Newspapers: Few National and many Local Newspapers.
 - Dramatic Decline in Circulation.



A trip to Brussels



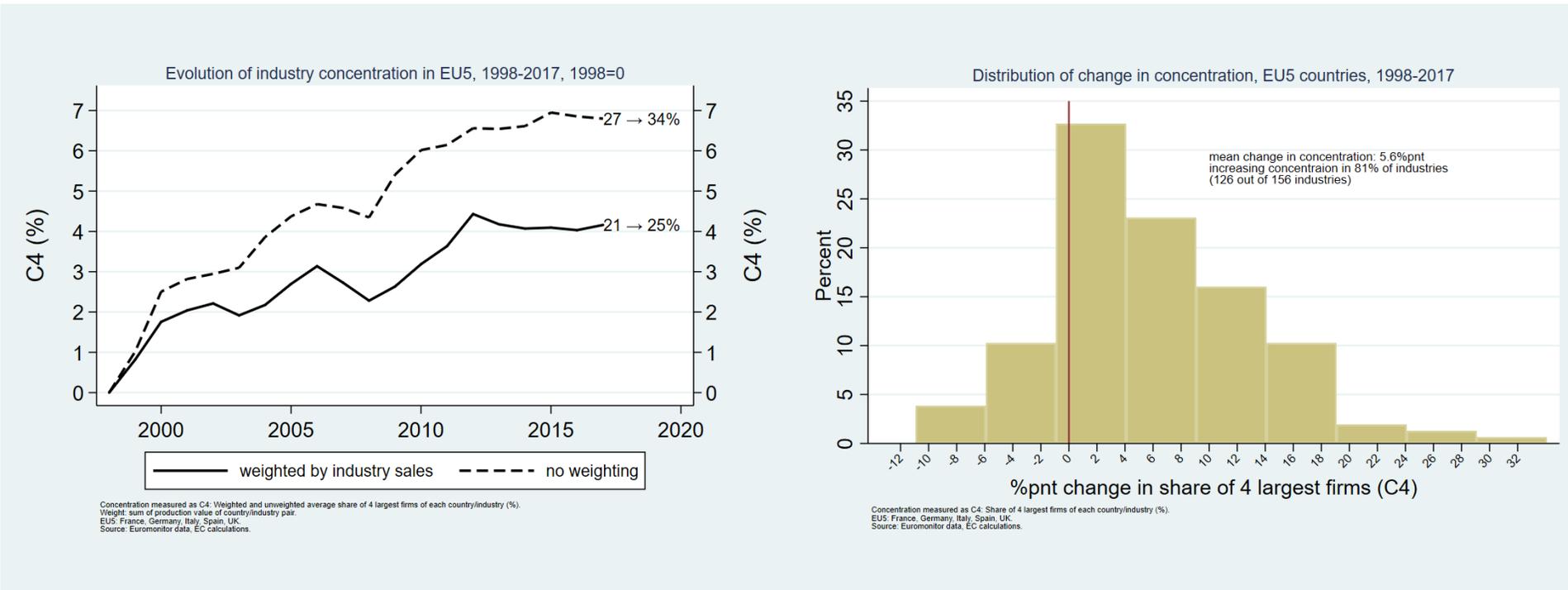
Margrethe Vestager ✓
@vestager

Happy to welcome our new chief economist prof. Tommaso Valletti - I appreciate the independent economic advice.

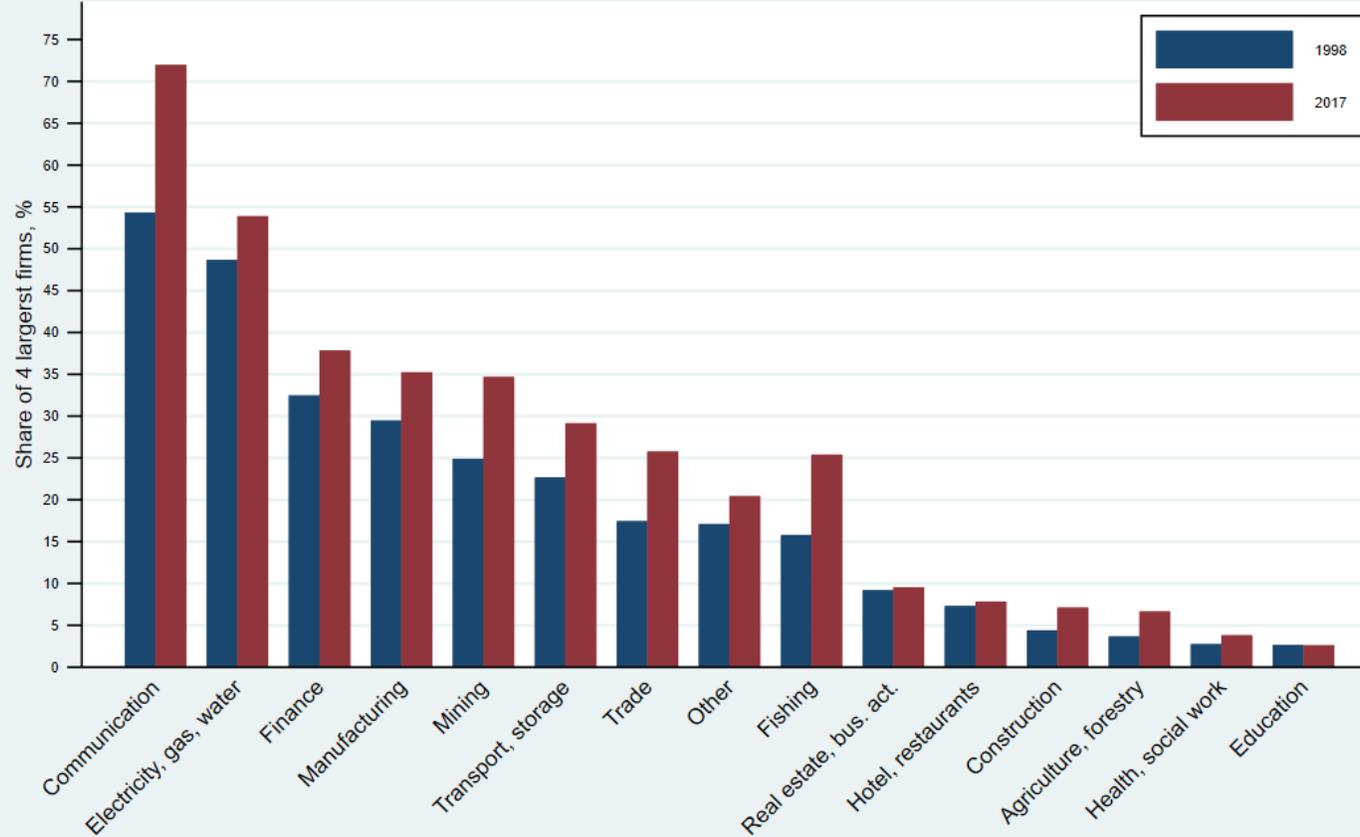


Moderate increase in average concentration

Concentration across the economy: 80% of industries became more concentrated



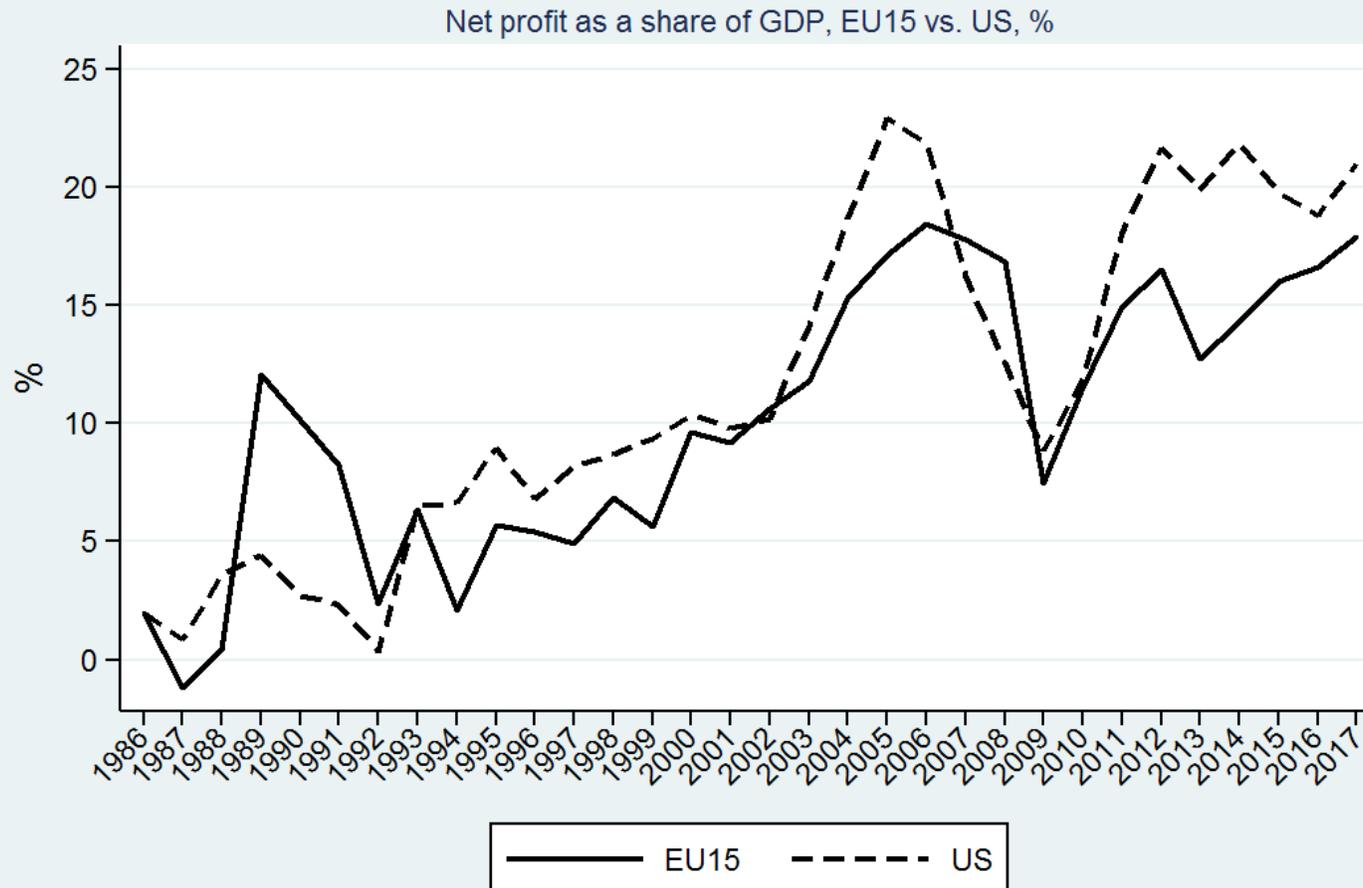
Concentration per industry categories, 2017 vs. 1998, EU5 countries



Concentration measured as C4: Share of 4 largest firms of each industry (%). ISIC 3 digit industries weighted by size into categories.
EU5: France, Germany, Italy, Spain, UK.
Source: Euromonitor data, EC calculations.

Increasing concentration across all main industry groups

Communication, energy, finance, manufacturing



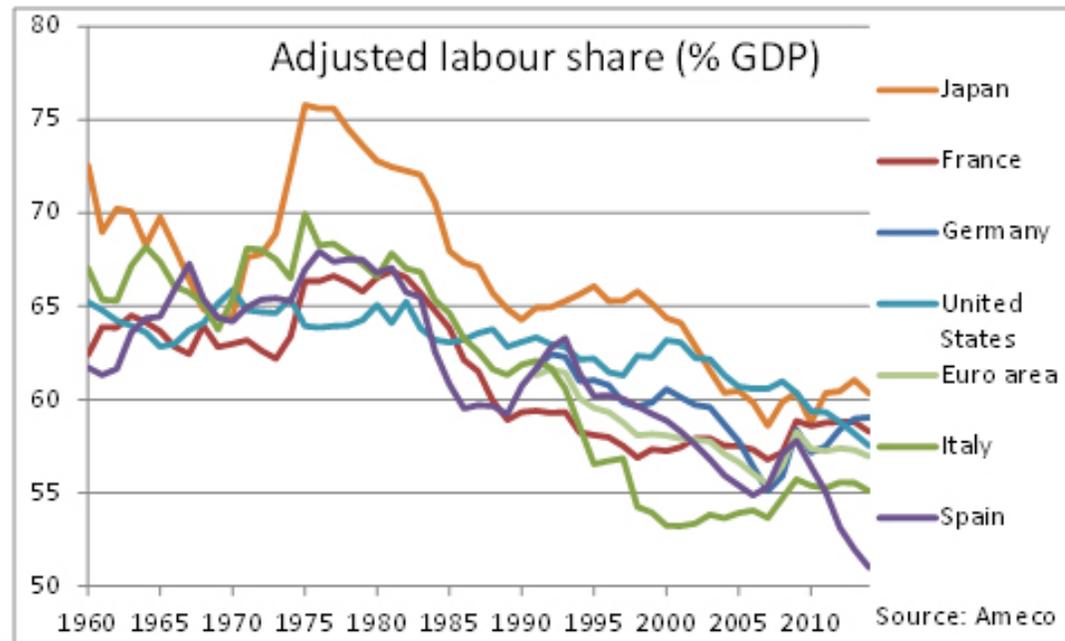
Source: European Commission (AMECO) based on National Accounts from Eurostat and Bureau of Economic Analysis.
 EU15: AT, BE, DE, DK, ES, FI, FR, GR, IE, IT, LU, NL, PT, SE, UK
 Net profit = net operating surplus - capital costs.
 Capital cost = lagged net real capital stock times Moody's AAA bond yield minus expected capital good inflation plus depreciation.

Aggregate profitability increasing in both EU and US

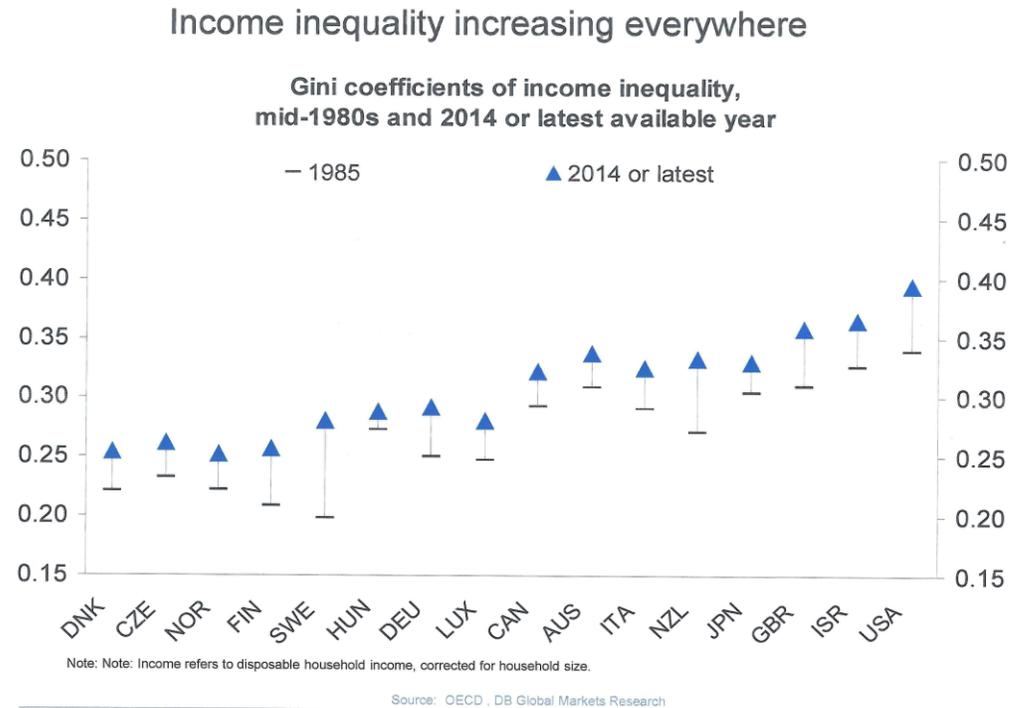
Profitability closely matching business cycle

Decreasing cost of capital/debt important factor in increasing net profitability (loose monetary policy)

Labour share



Inequality: EU still below US (but on the rise)



Why competition matters?

- Oligopolies increased the cost of the basket of goods and services consumed by a typical household by 5 to 10 percent. Returning to healthy competition would save *directly* at least **€300 per month per household**.
- **Italy**: direct saving of about €90 billion per year.
- But this is only part of the story. Competition forces firms to invest. Taking that into account, estimate that (private) **GDP would increase** (for Italy about €150 billion per year). But there is more...
- Competition would also **redistribute income**. Bringing competition back would increase wages and decrease payouts (dividends and buybacks).

Digital giants: cases

- Apple tax
- Google Shopping
- Google Android
- Google AdSense
- Amazon Marketplace
- ...

2019 [\[edit \]](#)

This list is up to date as of December 31, 2019. Indicated changes in market value are relative to the previous quarter.

Rank	First quarter		Second quarter		Third quarter		Fourth quarter	
1		Microsoft ▲904,860 ^[11]		Microsoft ▲1,028,000 ^[11]		Microsoft ▲1,062,000 ^[11]		Apple Inc. ▲1,305,000 ^[12]
2		Apple Inc. ▲895,670 ^[12]		Amazon.com ▲928,540 ^[13]		Apple Inc. ▲1,012,000 ^[12]		Microsoft ▲1,203,000 ^[11]
3		Amazon.com ▲874,710 ^[13]		Apple Inc. ▲911,240 ^[12]		Amazon.com ▼858,680 ^[13]		Alphabet Inc. ▲922,130 ^[14]
4		Alphabet Inc. ▲818,160 ^[14]		Alphabet Inc. ▼751,170 ^[14]		Alphabet Inc. ▲838,020 ^[14]		Amazon.com ▲916,150 ^[13]
5		Berkshire Hathaway ▼493,750 ^[15]		Facebook, Inc. ▲551,490 ^[16]		Berkshire Hathaway ▼508,530 ^[15]		Facebook, Inc. ▲585,320 ^[16]
6		Facebook, Inc. ▲475,730 ^[16]		Berkshire Hathaway ▲521,100 ^[15]		Facebook, Inc. ▼508,050 ^[16]		Alibaba Group ▲569,010 ^[17]
7		Alibaba Group ▲472,940 ^[17]		Alibaba Group ▼439,150 ^[17]		Alibaba Group ▼435,400 ^[17]		Berkshire Hathaway ▲553,530 ^[15]
8		Tencent ▲440,980 ^[18]		Tencent ▼432,080 ^[18]		Tencent ▼398,840 ^[18]		Tencent ▲461,370 ^[18]
9		Johnson & Johnson ▲372,230 ^[19]		Visa ▲379,271 ^[20]		Visa ▲385,370 ^[20]		JPMorgan Chase ▲437,230 ^[21]
10		Visa ▲353,710 ^[20]		Johnson & Johnson ▼370,300 ^[19]		JPMorgan Chase ▲376,310 ^[21]		Visa ▲416,790 ^[20]

Different business models

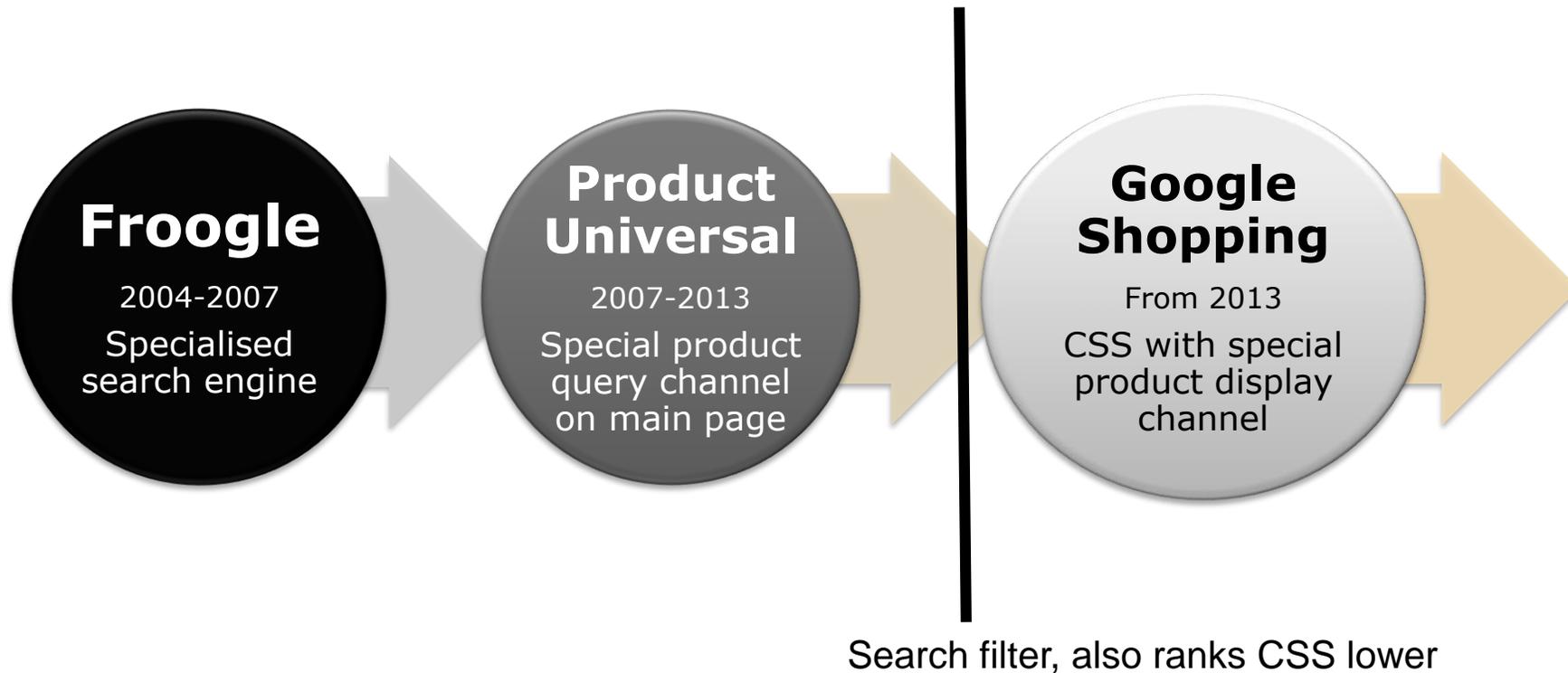
- Paid ads: Google/Facebook
- Digital marketplace: Amazon
- Selling stuff: Apple, Microsoft
- Microsoft? Last “big” antitrust case **in US** 20 years ago

What happened?

- “Move fast and break things”
- Breaking rules: taxes, privacy, politics, competition

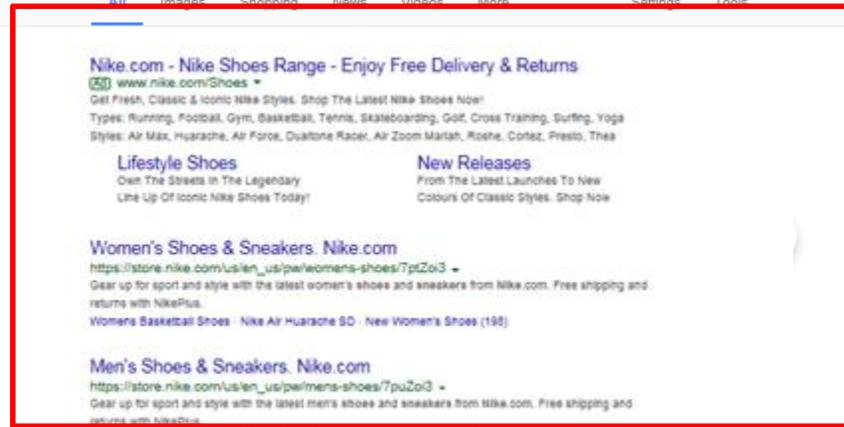
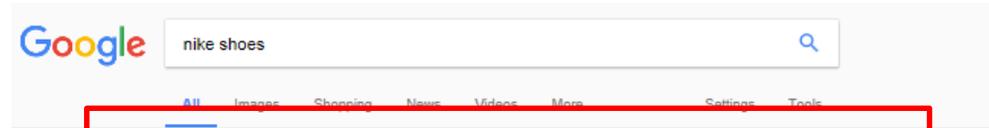
Google's specialised product search

On top of organic search product results and paid product ads





European
Commission



Google Shopping
on the top

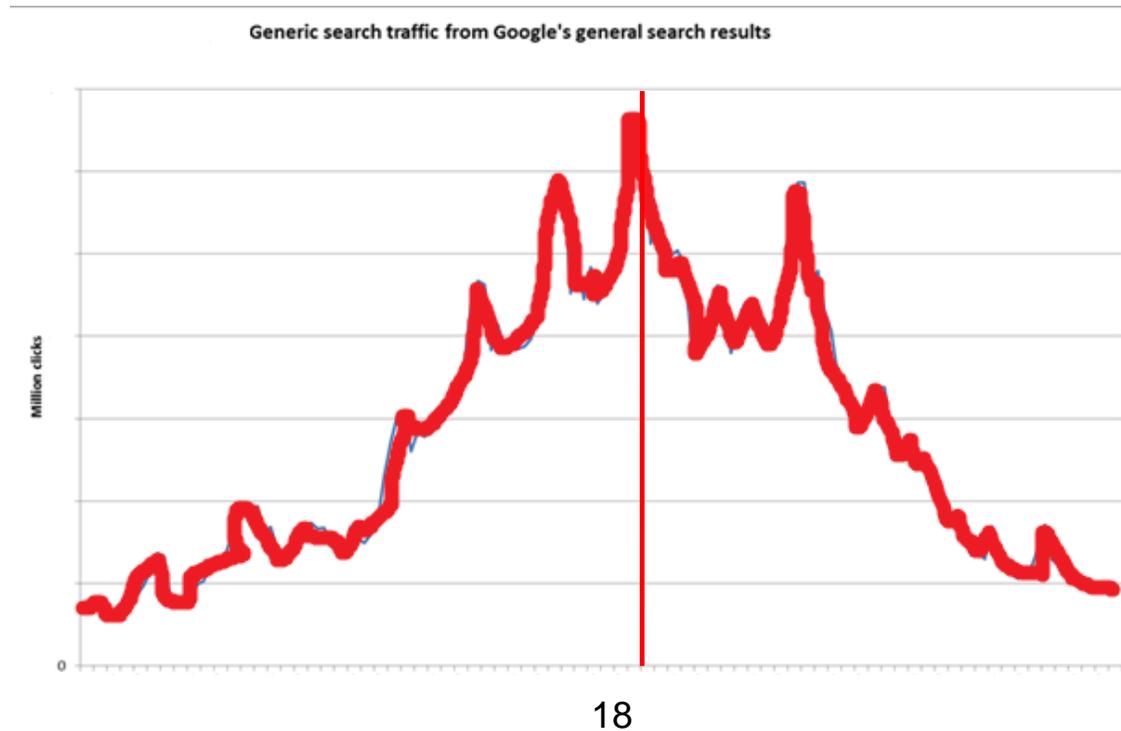


Competitors not visible



Traffic data

Generic search traffic from Google to CSSs



Work that could (and should) be done

- In the end, are **consumers** worse off?
- In 2019, we scraped Amazon.de for bestselling products -> different categories, different products
- Product description in Amazon is very long – we had to cut
- Search based on keywords (e.g. “Baby car seat”) on google.de and rival CSSs (Billiger.de and Guenstiger.de)
- Price comparisons based on the same *display position*
- Google *always* more expensive...

Theory and practice

- In theory:
 - - *Multi-homing*
 - - *Rational search*
 - - *Low transaction costs*
 - - *Information*
 - - *Dynamism*
 - - *Democracy!*
- In practice:
 - - *Single-homing*
 - - *Zero clicks on page 2*
 - - *“Bundling”/Cannot port any data*
 - - *?*
 - - *?*
 - - *??*

What can we improve?

- Mergers
- Privacy
- Lobby

Mergers: fit for purpose?

- Number of GAFAM mergers since 2000: **800+**
- Not investigated by anyone: **98%**
- Blocked (globally): **0**

Mergers: proposals

1. Systematically examine data for acquisitions, price paid, nature of business acquired, internal documents giving reasons for transactions
2. Value of the transaction is informative for digital:
 - Thresholds
 - Use **evaluation methods** to catch pre-emption (large, unexplained payments)
3. For super-dominant firms, shift the burden of proof (larger general debate on structural presumptions):
 - Parties should show efficiencies, else adopt an anticompetitive presumption

Data: competition AND privacy

- Search activity



- Browsing activity



- Responses to targeted ads



- Location



- Electronic communications



- Activity in social networks



- Past purchases



Some platforms
can combine
different sources

Economics: be creative

- “Attention Oligopoly” with A. Prat, i.e., follow the money...
- Model digital platforms as **attention brokers** who find ways to get users to spend time on their platforms. An attention broker:
 - Exploits *individual usage data* to infer real-time individual consumption preferences
 - Sells *individually targeted advertising* space to firms that supply the product needed (retail)

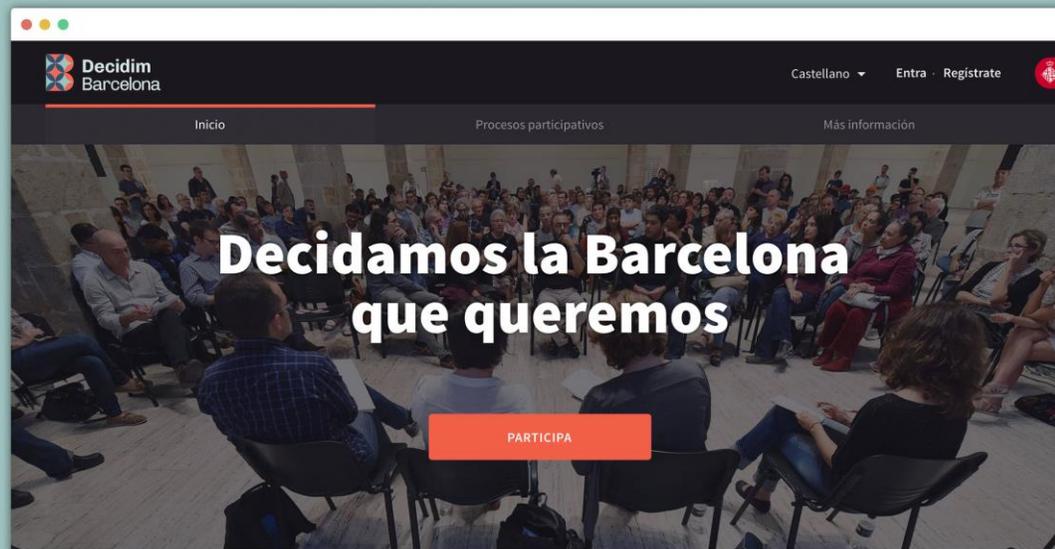
Health data

- Deepmind
- NHS: 2m individual patients (no com)
- Without notice, integrated with An
- Dangerous: must ask questions be

A collage of images related to Google DeepMind and AlphaGo. At the top, a banner for the "Google DeepMind Challenge Match" dated "8 - 15 March 2016" features the logos of Google DeepMind and AlphaGo. Below the banner, three people are seated at a table, likely participants in the match. In the foreground, several smartphone screens display a patient profile app for "JONES, Robert". The app shows a "Patient Profile" with details like "DOB 03 Jan 1923 (92yr) - MRN 45683338" and "7 West - 8". It lists "CHRONIC DIAGNOSES" such as Asthma and Enlarged prostate, and "PREVIOUS ACUTE DIAGNOSES" like Pneumonia and Acute Kidney Injury. A "Full Blood Count" section shows "Hb" at 15 g/L and "Platelets" at 184 x10⁹/L. The "streams" logo by DeepMind Health is also visible. On the right, a partial view of another app screen shows a list of patients including "AARONSI" and "BARTON".

Barcelona vs Toronto

- Sidewalk Labs
- Barcelona (Decidim)



Bienvenido/a a la plataforma de participación de Barcelona.
Construyamos una ciudad más abierta, transparente y colaborativa.
Entra, participa y decide.



The algorithm (aka the business model)

THE INTERPRETER

On YouTube's Digital Playground, an Open Gate for Pedophiles

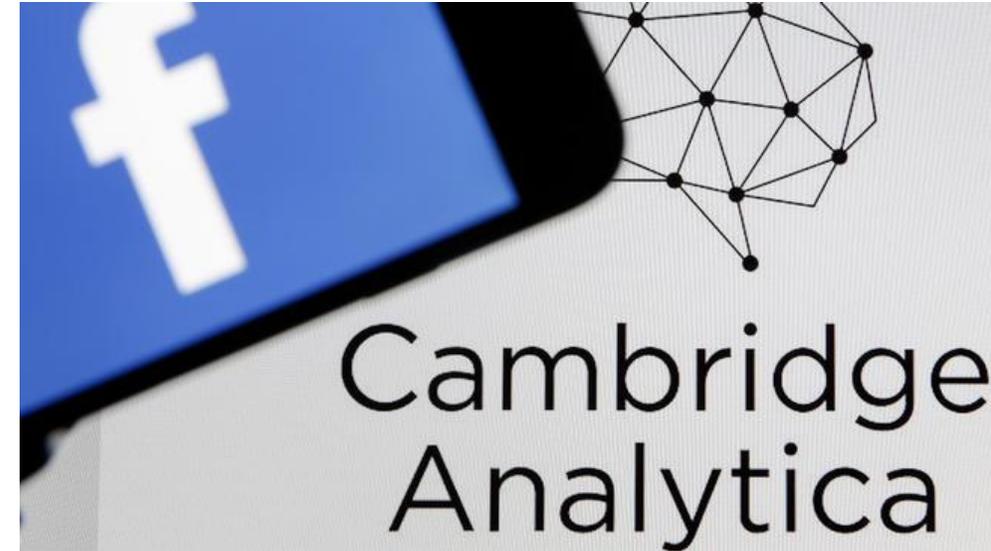
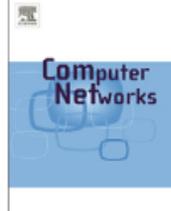


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Reprint of: The anatomy of a large-scale hypertextual web search engine

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Thank you & buon viaggio!

<https://www.imperial.ac.uk/people/t.valletti>

<https://twitter.com/TomValletti> 