

Network Effects in an Era of Big Data

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Plan

- ① Do what I was supposed to do (that is, talk about network effects)
- ② Do what I was not supposed to do (talk about new research I have on 'big data')

Do Network Effects Increase in the Number of Users?

- No - Network Effects are localized
- No - Network Effects can be negative

Network Effects are localized

- Show that in the adoption of video messaging people really only care about the adoption of people they end up talking to.
- Don't care about the general size of the network
- Only care about broader network (friends-of-friends) in very uncertain times

Source: Tucker, C: Network Stability, Network Externalities, and Technology Adoption in Advances in Strategic Management, Volume 37, pp.151 - 175

But Hang On - Can this Generalize Outside of Communications?

- Forces of personalization in general for platform markets
 - Ads: If I am selling charter jets I only care about how many people search for charter jets
- Boundary conditions: Genetic Database
 - When primary purpose is one-to-many[-millions] matching

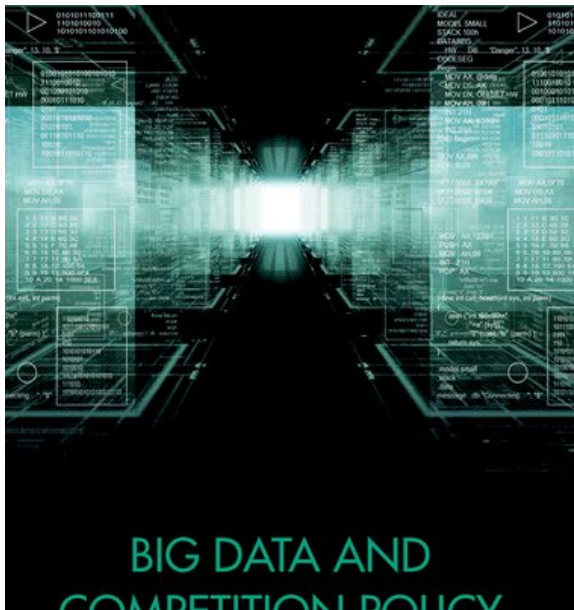
Network Effects can be negative

- MIT Digital Currency Experiment gave \$100 in bitcoin to all undergraduates in 2014
- Aim was to kickstart bitcoin platform by maximizing number of users at MIT
- Ended up making bitcoin uncool, and techies disadopted bitcoin

Source: When early adopters don't adopt with Christian Catalini. Science Vol. 357, Issue 6347, 2017 pp. 135-136

Turning to 'big data'

Often Assumed that Big Data is the Nuclear Weapon of Competition



We Never Talk Much About Data Brokers But...

Is 'Big Data' Valuable?

- My recent work shows that black-box profiling by data brokers based on 'big data' is not very good.
 - ① We asked them to deliver us middle-aged males in a regular ad campaign? 40-72% success rate
 - ② We asked them to measure an audience on a website - undermeasured maleness by up to 46%
 - ③ We asked them to just tell us what they knew about a cookie they had data for: 27-62% of the time they correctly identified gender.

Source: Neumann, Nico and Tucker, Catherine E. and Whitfield, Timothy, How Effective Is Black-box Digital Consumer Profiling and Audience Delivery?: Evidence from Field Studies (June 25, 2018). Available at SSRN

Punchline

- Network Effects may not increase in number of users
 - The combination of size and network effects may not always be an anti-trust problem
- 'Big Data' often gives little value
 - The combination of size and data may not always be an anti-trust problem