

# Digitization: Policy Issues

Catherine Tucker

Let us continue what Avi started yesterday

Why is digital different?

# Outline

Motivation

Targeting

Search

Reputation

Distance

Sectors that matter

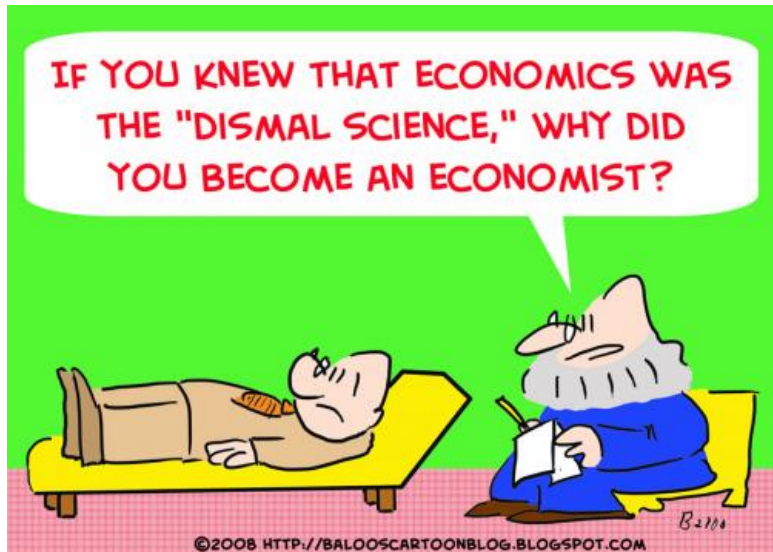
Media

Health

Also

Finale

We have an amazing opportunity ahead



But there are challenges



# BIG DATA: SEIZING OPPORTUNITIES, PRESERVING VALUES

Executive Office of the President

## What did you notice about the readings I set you?

- ▶ Shapiro, Carl, and Hal R. Varian. "US government information policy." University of California, Berkeley 30 (1997).
- ▶ David W. Stewart, Qin Zhao (2000) Internet Marketing, Business Models, and Public Policy. Journal of Public Policy & Marketing: Fall 2000, Vol. 19, No. 2, pp. 287-296.
- ▶ Greenstein, Shane M. and Lerner, Josh and Stern, Scott, The Economics of Digitization: An Agenda for NSF (2010). American Economic Association, Ten Years and Beyond: Economists Answer NSF's Call for Long-Term Research Agendas.
- ▶ Avi Goldfarb , Shane Greenstein & Catherine Tucker, 2014. "Introduction to "Economic Analysis of the Digital Economy"," NBER Chapters

## Discussion Question

Let us travel in time to 2026. Given what we know about the economic effects of the economics of digitization what policy questions will be important for policy makers to have answers to from economists?

## Before we start

I will be a little shameless and focus on my own research as I don't often have a chance to speak to such a desirable audience. Your job is to find the interesting questions I missed



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# What is targeting?

## Question from me to you

Are there other policy questions apart from privacy that targeting evokes?

## Lucky enough to get hold of close to ideal data

- ▶ Goldfarb and Tucker 2011 Management Science
- ▶ Field (a/b) tests of 9596 different online display ad campaigns across multiple countries
- ▶ For each campaign, on average 347 web users surveyed on purchase intention and ad recall. Half had seen the ad and half were in a control group

# Study regulation over personal data in Europe

- ▶ European Law become stricter 2003-4 as countries implemented 2002 E-privacy directive.
  - ▶ Some restriction of data-based targeting techniques
- ▶ Personal data regulation elsewhere had not changed since advent of commercial internet
- ▶ Compare change in ad effectiveness in Europe relative to elsewhere.

- ▶ Method: Diff-in-Diff-in-Diff
  - ▶ Difference between treatment and control groups in a/b tests
  - ▶ Difference before and after the regulation in Europe
  - ▶ Difference between Europe and elsewhere

# Regulation affects performance of online ads

- ▶ Advertising effectiveness dropped 65% in the EU relative to the rest of the world
  - ▶ Drop is specific to European websites rather than European consumers
  - ▶ When EU consumers visited US websites they behaved like US visitors
- ▶ Not all websites were affected equally
  - ▶ Ads on general interest websites (e.g. yahoo.com, nytimes.com) were affected more than ads for targeted websites (e.g. cars.com, babycenter.com)
  - ▶ Ads on health websites (which were more strictly regulated) were especially affected
- ▶ Not all ads were affected equally
  - ▶ Unobtrusive ads were affected more than larger ads and multimedia ads

# Implications

Regulating use of personal data affects how well online ads work

- ▶ If ads are less effective, it will limit the scope of the ad-supported internet
  - ▶ Back-of-the-envelope non-equilibrium calculations bound the cost of comparable legislation at \$14.8 billion to US advertisers or \$5.2 billion to US-based websites
- ▶ My Privacy advocate friends like me to emphasize that one framing is that many ads were unaffected.
- ▶ If ads on general internet websites are particularly affected, such sites will be less able to support themselves through advertising.
  - ▶ They may become less prevalent or they may begin to support themselves by other means
  - ▶ If unobtrusive ads become less effective, advertisers may increase obtrusive multimedia advertising at the expense of subtle, well-targeted ads



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# History of IO Work on Regulation

## De Regulation of natural monopolies

- ▶ Vertical Relations
- ▶ Microsoft: Network effects and Switching Costs
- ▶ Information Platforms

# Leaked Documents Show How Yelp Thinks It's Getting Screwed By Google

Posted Jul 9, 2014 by [Josh Constine](#) (@joshconstine)



Documents leaked to TechCrunch from inside [Yelp](#) allege that Google is manipulating its search results to favor [Google+](#) content over Yelp content. The materials accuse [Google](#) of blatantly highlighting its own products in searches made in the US but not in Europe in order to avoid angering EU regulators who are reviewing Google antitrust complaints.

ADVERTISEMENT



Amazingly simple tools for **customer support.**

[START FREE TRIAL](#)

<http://techcrunch.com/2014/07/09/yelp-google-anti-trust>

Quality Provision in the Presence of a Biased Intermediary  
Alexandre de Corniere and Greg Taylor [http://users.ox.ac.uk/~inet0118/pdf/Taylor\\_14-06.pdf](http://users.ox.ac.uk/~inet0118/pdf/Taylor_14-06.pdf)

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# Is this a policy question?

- ▶ Perhaps Reputation mechanisms are a substitute for regulation?
- ▶ Answering this question seems essential for understanding effect of sharing economy

What Safeguards: Do we need to police this kind of policing?

## Best Paper I have seen on this

[http://conference.nber.org/confer/2015/SI2015/PRIT/Fradkin\\_Grewal\\_Holtz\\_Pearson.pdf](http://conference.nber.org/confer/2015/SI2015/PRIT/Fradkin_Grewal_Holtz_Pearson.pdf)

- ▶ 74% of guests give 5\* rating
- ▶ Use the results from two field experiments intended to reduce bias to show
  - ▶ Non-reviewers tend to have worse experiences (\$25 dollar incentive)
  - ▶ Simultaneity experiment shows that there is some strategic behavior though more of a social component



So we have some evidence that we should be worried reviews don't give enough information as they are too nice? However, is that what regulators are worried about.

# Regulators are taking action

MT NEWS MT CLIPPINGS MT COMMENTS

The Sydney Morning Herald  
National

Accelerating next **Hewlett Pa  
Enterprise**

Investigations Interactives Health Education Public Service News World War 1 Centenary Clique

You are here: Home > National >

## ACCC calls for regulation of user-generated restaurant reviews

April 26, 2014 [Read later](#)

**Kim Arlington**  
Reporter  
[View more articles from Kim Arlington](#)

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Navigation icons: back, forward, search, etc.

# Regulators are taking action

Technology

## Trip Advisor 'fake reviews' investigated in Italy

🕒 21 May 2014 | Technology

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But we have little economics research to help them

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# Fundamental Question

How can we regulate an economy dominated by an internet that is not governed by national boundaries?

Avi Goldfarb, Catherine Tucker (2011) Advertising Bans and the Substitutability of Online and Offline Advertising. *Journal of Marketing Research*: April 2011, Vol. 48, No. 2, pp. 207-227.

- ▶ Has the growth of the Internet has reduced the effectiveness of government regulation of advertising.
- ▶ Combine nonexperimental variation in local regulation of offline alcohol advertising with data from field tests that randomized exposure to online advertising for 275 different online advertising campaigns to 61,580 people.
- ▶ People are 8% less likely to say that they will purchase an alcoholic beverage in states that have alcohol advertising bans compared with states that do not.
- ▶ For consumers exposed to online advertising, this gap narrows to 3%.
- ▶ The effect of online advertising is disproportionately high for new products and for products with low awareness in places that have bans.

In other words it is hard to restrict access to information by regulating the offline in an online world

What else is there to say?



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# A Sector-Specific Approach to Policy

- ▶ Another lens is rather than thinking of economy-wide shifts also thinking about how digital technologies change our policy understanding in specific sectors
- ▶ Probably any area of applied microeconomics that is important enough to conventionally be a sub-discipline.
- ▶ I will focus on a few obvious ones.

Luckily you just heard from Waldfogel

# First an anecdote from 2006

# New Summary Piece coming out

- ▶ Argue that:
  - ▶ Accessibility and transferability of data
  - ▶ Deepening of data
- ▶ Has transformed the frontiers of health policy

# Miller and Tucker JPE 2011

- ▶ Headline - healthcare IT saves babies
- ▶ But more interesting stuff
  - ▶ Healthcare IT helps the disadvantaged
  - ▶ Effect of privacy regulation

# Miller and Tucker Privacy Protection, Personalized Medicine and Genetic Testing

- ▶ Headline: Horserace on privacy regulation. Coase works
- ▶ But more interesting health stuff
  - ▶ Transfer of power to patient
  - ▶ Personalization as a not good thing

# Health Care IT Work as a lens on other fields

- ▶ HIMSS records all data on technology purchases by hospitals
- ▶ AHA gives data on all hospitals in US
- ▶ Healthcare sector crawling exogenous variation
- ▶ Beat that!



# Have not even started on how digitization effects policy questions in:

- ▶ Education (Moocs)
- ▶ Labor markets (Sharing Economy)
- ▶ Finance (Bitcoin)
- ▶ Crime (4th Amendment)
- ▶ Etc

## Before we end

What policy questions are you answering in your own research that we have missed? Or what policy questions would you like to tackle and how?

Thank you.

Please now ask me questions! And visit.  
<http://cetucker.scripts.mit.edu>