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INEQUALITY, PRIVACY, AND DIGITAL MARKET DESIGN

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The Digital Divide

- Individuals: High-income educated urbanites have adopted the internet earlier and at higher rates.
- Businesses: Urban businesses in high-income high-education counties have adopted more advanced internet technologies, and generated a greater benefit from them.
- Hospitals: Urban hospitals in high-income high-education counties have adopted more advanced Electronic Medical Records systems, and generated a greater benefit from them.

Sources: Goldfarb and Prince 2008; Forman, Goldfarb, and Greenstein 2005, 2012; Dranove, Forman, Goldfarb, and Greenstein 2014

Market Failures and the Digital Divide

- Academic research and various policy initiatives emphasize two potential market failures driving the digital divide:

  1. Weak Education

  2. Weak Competition

- Education is covered by other sessions at this conference.
- Competition solutions have been well-researched.

Sources: Greenstein and Prince 2007; Goldfarb and Prince 2008; Federal Communications Commission 2010; Council of Economic Advisors 2016; World Bank 2016

A different source of digital inequality

The Market for Data

- Everything that occurs online is easily recorded, stored, and analyzed.
- Much of the digital economy is based on the collection, storage, and analysis of data.
- Companies and governments can now observe actions at an extraordinarily detailed level.
- Recent advances in ICTs have made data collection sufficiently scalable that almost everyone is of sufficient commercial interest to warrant electronic tracking.

Designing the market for data

- Privacy regulation is the main policy instrument over the market for data.
- The existing policy discussion does not focus on the inequality.
- It reflects a desire to ensure that personal information flows in accordance with expectations.
- The key challenge is that, once created, digital information is non-rivalrous.
- Digital information therefore biases toward openness, making it difficult to restrict the flow of information without explicit rules or legislation.
- Most standard economic models view information flows as positive, leading to more efficient exchange.

Sources: Nissenbaum 2010; Gans 2012; Goldfarb and Tucker 2011; Posner 1981; Stigler 1980

Privacy policy is redistributive

- Privacy policy, by definition, restricts information flows.
- The provision of information in the digital economy has been transformative but unequal.
- Information flows help some and hurt others.
- Privacy policy will affect inequality if the direct benefits or negative externalities of information flows differ across socioeconomic groups.

Sources: Posner 1981; Acquisti, Taylor, and Wagman 2016

Data flows, privacy, and inequality

Regulation of data flows to information providers

Advertising-supported information

- European privacy regulation has reduced the effectiveness of European online advertising.
- General interest sources (e.g. news, games) were affected more than specialized websites (e.g. automotive, beauty, travel).
- Advertising to higher-income people generates higher revenue.
- If restrictions on data use mean that higher-income people cannot be identified on general-interest websites, then it is likely that advertising will shift to specialized websites that cater to higher-income people.
- Restrictions on data usage might lead to relatively more content that serves higher-income individuals.

➢ Regulation exacerbates inequality

Source: Goldfarb and Tucker 2011

Data and manipulation

- Individual decisions to share information may be marked by behavioral biases, leading to suboptimal decisions.

- If these biases are known to firms, manipulation becomes feasible.

- Less educated people may be more susceptible to these biases and manipulations.

➢ Regulation alleviates inequality

Source: Acquisti and Grossklags 2005

Regulation of data flows to goods and services providers

Price discrimination

- Information enables price discrimination.
- Restricting information flows is likely to reduce price discrimination.
- Higher income consumers are less price sensitive.
- People with higher willingness to pay will hesitate to purchase items if their purchase can be used as a signal of their higher willingness to pay for items in the future.

Sources: Acquisti and Varian 2005; Taylor 2004; Gordon, Goldfarb, and Li 2013

Price discrimination examples

- The Wall Street Journal reported in August 2012 that Orbitz showed Mac users used higher-priced (and higher-rated) hotels.

- Another report from the Wall Street Journal, documented price discrimination at a variety of websites based on consumer information such as location.

- The key driver of discrimination was price at local stores. If prices are higher in wealthy neighborhoods than data use increases prices for the wealthy.

  ➢ Regulation exacerbates inequality

Price discrimination examples

- In 2015, John Hancock announced an insurance discount for ratepayers that wear a Fitbit to enable exercise tracking.

- Such discounts will disproportionately benefit the wealthy given that
  - The wealthy are more likely to adopt such technology.
  - The wealthy are more fit.

➢Regulation alleviates inequality

Sources: Pew 2016; Deaton and Paxson 1999; ComputerWorld 2015

Regulation of data flows in healthcare and the public sector

Healthcare

- Electronic medical records can improve health outcomes.
- For example, they reduce neonatal mortality by enabling data flows between doctors, hospitals, and other points of care.
- Less educated, unmarried, black, and Hispanic mothers benefit most.
- Privacy regulation slowed the diffusion of electronic medical records to hospitals.
  - ➢ Regulation exacerbates inequality

Sources: Miller and Tucker 2009, 2011

Place-based policy

- Census data informs the allocation of state or federal funds across counties; and the launch of particular programs across locations.

- To respect respondent confidentiality, information on low-population counties is often hidden, either through cell suppression or noise infusion.

- Information about low-population (often poorer) counties is worse, likely leading to lower-quality decisions that affect people in those counties.

  - Regulation exacerbates inequality

Source: Abowd and Lane 2004

Privacy regulation can exacerbate or alleviate inequality

- Exacerbate:
  - Online information provision through ad-supported websites
  - Price discrimination for goods and services
  - Healthcare
  - Place-based policy

- Alleviate:
  - Manipulation of information
  - Price discrimination for insurance

Designing privacy policy with an eye to inequality

Current approaches to privacy regulation

- Sectoral:
  - The United States uses a sectoral approach, with different laws for financial services, credit reporting, cable television, and other sectors.
- Omnibus:
  - Europe uses an omnibus approach, where the same regulation applies to any use of personal data.
- Generally, privacy advocates favor the omnibus approach as more complete and more protective of a fundamental right to privacy. There is an implication that the omnibus approach better-protects the vulnerable.

Source: Hoofnagle 2016

Strengths of a sectoral approach

- In the context of privacy and inequality, heterogeneity across contexts is particularly relevant.
- It might enable vulnerable populations to pay lower prices in insurance while preventing them from receiving price discounts in other settings.
- It might lead to less exploitation by firms while reducing the quality of healthcare and government services.
- Thus the impact of privacy regulation for low income individuals in insurance will be different from the impact for low-income individuals in consumer packaged goods.
- A one-size-fits-all approach may exacerbate inequality.

Open research questions (everything!)

- None of the above-mentioned studies focused on inequality.
- Given that privacy policy is redistributive, what models can help inform the nature and breadth of privacy regulation in each sector?
- The above discussion treats each case as separate: insurance vs. healthcare vs. online advertising. Is there a unifying framework that can help identify whether regulating data flows will benefit rich or poor?
- What does market-focused regulation look like? Can markets for information be designed that alleviate rather than exacerbate inequality?

Thank you.

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