The Economics & Business of Privacy: Past, Present, and Future

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The Economics of Personal Data and Privacy: 30 Years after the OECD Privacy Guidelines
Past

What we have studied
The economic theory of privacy

Present

What we are studying
The empirics of privacy

Future

What else we should be studying
Behavioral economics and the Economics of PETs
The economic theory of privacy
The economic theory of privacy

- Early 1980s
  - The Chicago school approach
- Mid 1990s
  - The IT explosion
- After 2000
  - The rise of formal microeconomic models
The Chicago School approach

- Privacy is redistributive (Posner 1978, 1981)
- Privacy creates inefficiencies (Posner 1978, 1981)
- Privacy regulation is, at best, ineffective (Stigler 1980)
- Privacy regulation, in fact, may not even be needed for privacy protection (Noam 1996, channeling Coase)
Critiques of the Chicago School approach

- ‘Monolithic’ view of privacy (Hermalin and Katz 2006)
- Externalities due to secondary use of personal information (Varian 1996)
- Competition pushes firms to invest more than the socially optimal amount in gathering consumer data (Taylor 2008)
- If consumers are myopic, all surplus from data-enhanced transactions is appropriated by sellers (Taylor 2004; Acquisti and Varian 2005)
- Ultimately, lack of privacy tilts the long-run balance of power between data subjects and holders
A nuanced picture

- Too *much* privacy may create inefficiencies/distortions in the marketplace...
- ... but so may too *little* privacy
- Market forces alone *could* lead to “optimal” level of privacy protection...
- ... but only if consumers are fully informed, sophisticated, and forward looking
The empirics of privacy
The empirics of privacy

- The empirics of privacy is about the tangible and intangible costs and benefits associated with data protection and data sharing for data subjects as well as potential data holders.
- However: Futile to attempt an overall quantitative assessment of “how much” data sharing is the optimal amount of data sharing.
- Instead: three exemplary studies.
1. Can privacy protection be a source of competitive advantage?
Duracell Alkaline Battery, AA, 8/PK
Duracell Coppertop Alkaline AA Batteries Long-life alkaline batteries provide the best, longest power source. Recommended for use in smoke alarms, flashlights, lanterns, calculators, pagers, cameras, recorders, radios, CD players
www.ccvsoftware.com/c/product.html?record=56119

$14.45 (w/shipping)

Duracell AA8 DURACELL - Alkaline Batteries Value Packs
Duracell AA8 DURACELL Alkaline Battery Value Packs...
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$14.60 (w/shipping)

$14.80 (w/shipping)

Duracell Alkaline Battery Value Packs
Duracell AA8 DURACELL Alkaline Battery Value Packs DURACELL AA ALKALINE BATTERY - 8 PACK Cardboard card for peg hook 8 pack Specifications Weight: 0.45 lbs Length 4.5 inches Width 3.75 inches Height 1 inches Manufactures Web site www.duracell...
www.instawares.com/Coppertop-Alkaline-Lithium-Bat...

$15.14 (w/shipping)

Duracell Coppertop Alkaline AA Batteries
Long-life alkaline batteries provide the best, longest power source. Recommended for use in smoke alarms, flashlights, lanterns, calculators, pagers, cameras, recorders, radios, CD players, medical equipment, toys and electronic games. Dependable after seven years of storage.
www.officequarters.com/product.php/item/DUR-MN1500B8...
Condition 2
Irrelevant extra information

Duracell AA batteries 8-pack
www.ccvsoftware.com/c/product.html?record=56119

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www.officequarters.com/product.php/item/DUR-MN1500B8...

$15.14 (w/shipping)
Condition 3
Privacy-related extra information

Duracell AA batteries 8-pack

Privacy premium:
$0.69  4.8%

Duracell Alkaline Battery, AA, 8/PK
Duracell Coppertop Alkaline AA Batteries Long-life alkaline batteries provide the best, longest power source. Recommended for use in smoke alarms, flashlights, lanterns, calculators, pagers, cameras, recorders, radios, CD players
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$14.45 (w/shipping)

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discountofficeitems.zoovy.com/product/DURMN15RT122 Privacy Policy

$14.60 (w/shipping)

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2. The paradoxical effects of privacy reassurances
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![Graph showing the probability of responding affirmatively to privacy reassurances. The x-axis represents no assurance, weak assurance, and strong assurance. The y-axis represents the probability of responding affirmatively ranging from 0 to 0.25. The graph shows an increase in the probability of responding affirmatively from no assurance to weak assurance, and then a decrease with strong assurance.](image-url)
3. Privacy and the paradox of control

**Study on Ethical Behavior**

IMPORTANT: All answers are voluntary. By answering a question, you agree to give the researchers permission to publish your answer.

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>1. Are you married?</td>
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<td></td>
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<td>2. Have you ever been fired by your employer?</td>
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<td></td>
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<td>3. Have you ever stolen anything (e.g., from a shop, a person)?</td>
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<td>4. Have you ever used drugs of any kind (e.g., weed, heroin, crack)?</td>
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<tr>
<td>5. Have you ever lied about your age?</td>
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<tr>
<td>6. Have you ever had cosmetic surgery?</td>
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<td>7. Have you ever done any kind of voluntary service?</td>
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<td>8. Have you ever had sex in a public venue (e.g., restroom of a club, airplane)?</td>
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<tr>
<td>9. Have you ever made a donation to a non-profit organization?</td>
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<tr>
<td>10. Do you have any permanent tattoos?</td>
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[Close]
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3. Privacy and the paradox of control

**Average Publication Rates**

- **Sensitive questions**
  - Implicit control
  - Explicit control
- **Non sensitive questions**
  - Implicit control
  - Explicit control
Behavioral economics
and the Economics of PETs
Behavioral economics of privacy and Soft paternalism

(As evidenced by the previous studies,) growing recognition that consumers’ privacy decision making is adversely affected by

- Incomplete information
- Bounded rationality
- Cognitive and behavioral biases
Behavioral economics of privacy and Soft paternalism

- Behavioral economics, applied to privacy, can therefore help us:
  - Understand those biases
  - Recognize that ‘choice and notification’ models cannot work in isolation from the rest of the OECD privacy guidelines
  - Inform policy and technology design, to ameliorate decision-making (soft paternalism)
The Economics of Privacy Enhancing Technologies (PETs)

- Can we use PETs to get the best of two worlds?

- That is: Data protection + Data sharing/analytics/big data?

  - Authenticated yet un-identifiable digital certificates ✓
  - Anonymous yet verifiable elections ✓
  - Privacy-preserving collaborative filtering ✓
  - Privacy-preserving behavioral advertising ✓
  - Complete operations (e.g., data mining) on encrypted spaces ✓
  - [...]


For more info

- Google: economics privacy
- Visit: http://www.heinz.cmu.edu/~acquisti/economics-privacy.htm
- Email: acquisti@andrew.cmu.edu