



# Privacy and the Ownership of Personal Information

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# Some Big Questions

- Privacy

- A good thing or fraud?

- Property rights to information

- Whose information is it, anyway?

- Does the answer matter?

# Focus today on one of three meanings of privacy: keep secrets from private parties.

- The ability to restrict the dissemination of personal information to a trading partner.
  - Personal information and potential employers.
- The ability to restrict the dissemination of personal information to third parties.
  - Leakage or sale of personal information.
  - Relevant information may be that a transaction has taken place.

# Two Other Meanings

- The ability to avoid being bothered by private parties.
  - Freedom from spam and telemarketing.
- Autonomy from the state.
  - U.S. Supreme Court's use of privacy to create abortion rights.
  - Combination of keeping information from the government and not subject to constraints or sanctions.

# Before concluding that substantial governmental intervention is needed...

- Understand the costs and benefits of privacy.
- Understand how well markets perform in supplying privacy.
  - Are there market failures and, if so, why?
- Determine whether government will have the information that would be needed to improve the outcome.



# Withholding Information from Trading Partners

# Reasons to Withhold Information from a Trading Partner

- Taste for privacy
  - May wish to conceal hotel movie rental choice from spouse.
- To block price discrimination (*i.e.*, price based on information irrelevant to post-transaction costs and benefits)
  - Buyer may wish to conceal characteristics that affect his willingness to pay.
  - Employee may wish to conceal characteristics that affect her reservation wage.
- To block projections of post-transactions costs and benefits
  - Household purchasing insurance may wish to conceal characteristics that affect expected claims.
  - Employee may wish to hide characteristics that affect her expected productivity.
- To avoid retribution
  - Conceal identity when denouncing a powerful party.

# Two Central “Findings” of the Economics of Privacy

- Privacy is inefficient absent a taste for it.
  - Privacy is fraud (Richard Posner).
  - Privacy can undermine efficient matching.
  - Privacy can lead to informational asymmetries that destroy markets.
  - Privacy can discourage productive investments.
  - Full disclosure leads to *ex post* efficiency.
- Property rights are a “solution” to privacy problems if consumers are well informed and rational.
  - Attain efficiency by assigning rights.
  - Address distributional concerns through the initial assignment of rights.



# The Chicago argument against privacy is incomplete.

- *Ex ante* efficiency matters too
  - Privacy can facilitate insurance provision by avoiding risk classification.
  - Privacy can preserve information investment incentives (e.g., trade secrets).
- Second-best considerations can arise.
  - Price rigidities and blacklists.
- The Chicago argument applies only to the limiting case of full information revelation.
  - Often, intermediate cases are relevant.
  - Focus this issue for a few minutes...

# Two Models in which to Explore the Findings

- Firms are uninformed about household characteristics.
  - Characteristics are “hard” information: households can conceal or reveal, but can’t successfully lie.
  - We will consider various information property rights regimes.
- Two market settings
  - Firm is a monopoly seller to households.
    - Personal information not benefit-relevant: household characteristics correlated with willingness to pay but not supply costs.
  - Firms are competitive employers of households.
    - Personal information benefit-relevant: households’ characteristics correlated with their productivity.

# Providing information to a monopolist can lower total surplus.

- It is well established that price discrimination in product markets may lead to higher or lower levels of total surplus.
- Example of an Online Monopolist with  $MC = \$1$ 
  - Men: 10 willing to pay \$31 and 10 willing to pay \$11
  - Women: 20 willing to pay \$11.
  - If sex is concealed, price = \$11 and all purchase.
  - What if seller can observe buyer's sex and charge different prices to men and women?
- In other cases, information revelation could have the opposite effect on both total surplus.

# Hard Information and “Unraveling”

- “No more than  $X$  people have told the police that I tried to murder someone.”
- How many people have told the police that I tried to murder someone?

# The right to withhold information from a monopolist may be worthless.

- Example of an Online Monopolist with  $MC = \$1$ 
  - Men: 10 willing to pay \$31 and 10 willing to pay \$11
  - Women: 20 willing to pay \$11.
- Suppose buyer has the right to conceal his or her sex.
  - Seller could announce that  $p = \$11$  if you reveal that you are a woman and  $p = \$30$  otherwise.
  - All women reveal the information, and men end up paying \$30.
- The equilibrium outcome is the same whether the property rights to personally identifiable data are given to the firm or to households.
- Strict prohibition of providing such information may be needed to prevent its transmission.

# A Competitive Labor Market Example

- Competitive employers make wage offers equal to expected productivity.
- Households have a verifiable characteristic as well as unobservable productivity.
  - Health records define two subpopulations: sick and healthy.
  - A worker has either high and low productivity.
  - High-productivity workers have higher reservation wages due to outside opportunities but this industry is the most efficient place for them to work.
  - *On average*, healthy workers have higher productivity.

# Information transmission to a competitive firm can lower total surplus.

- Suppose that:
  - for the population as a whole, average productivity is higher than the reservation wage of high-productivity workers; and
  - for the sick subpopulation, average productivity is less than the reservation wage of high-productivity workers,
- Then the market outcome is
  - efficient when health records are private, and
  - inefficient when health records are transmitted to employers.
- In other cases, revealing health records has no effect on total surplus or raises it.
- Depending on the parameter values, an improvement in employers' information can: (a) benefit both types of worker; (b) harm both types of worker; or (c) benefit high-ability workers at the expense of low-ability workers.

# The right to withhold information from a competitive firm may be worthless.

- In the competitive labor market example, the equilibrium outcome is the same whether the property rights to personally identifiable data are given to the firms or workers.
  
- Unraveling Logic when Workers have Info Ownership
  - Suppose no one revealed his or her health records.
  - Wage would reflect average productivity of the population.
  - Healthy workers would have incentives to reveal their information to get a higher wage.
  - But then firms would know that any worker who concealed his or her health records was unhealthy.
  - This logic applies even when there are many different levels of health status: initial round of revelation may trigger further revelation.



# Location Information

## ■ Targeted Advertising

- Unraveling logic does not apply.
- Possible distortions due to lack of pricing:
  - How does ad-supported content provider charge fee to those consumers who don't make themselves attractive targets?

## ■ Mobile Phones as Sensor Networks

- Anonymous location information may be valuable to others (e.g., traffic monitoring).
- Unraveling logic does not apply.
- Here, ownership matters for distribution of income and information.

# Two Central “Findings” of the Economics of Privacy

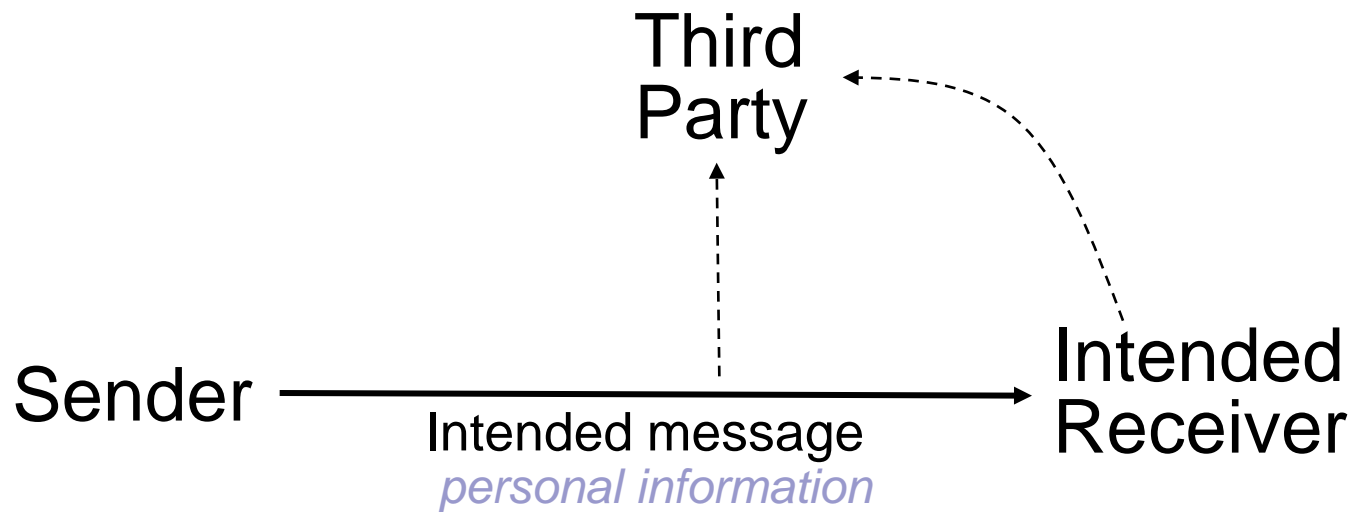
- Privacy is inefficient absent a taste for it.
- Property rights are a “solution” to privacy problems if consumers are well informed and rational.

Neither finding is valid.



# Leakage to Third Parties

# A Privacy Schematic for Personal Information



# The Problem

- Absent government restrictions, parties could prevent a third party from obtaining access to message between the sender and receiver if they both work to prevent it.
  - Encryption plus secure data storage.
- But will a self-interested receiver take efficient steps to block third-party receipt of the information?
  - Maintaining security can be costly.
  - Opportunity cost of not selling the information.

# There would be no problem in an idealized world.

- Absent transaction costs and asymmetric information, parties can bargain their way to efficient outcomes.
  - Receiver will take efficient level of care to prevent leakage.
  - Information intentionally shared if and only if worth more to the third party than privacy is to sender.

Hence,

- Allocation of property rights irrelevant (Coase theorem).
- Optimal to allow unfettered private contracting.

# Real life has transactions costs and asymmetric information.

- With transactions costs, individual negotiations are impractical.
- With private information about valuations, parties can fail to reach efficient bargains because of strategic misrepresentation.

Hence,

- Need to consider simple policies and practices that work well on average.
  - Cannot fine tune through bargaining based on individual characteristics.

# Privacy can be viewed as an element of product quality.

Suppose that

- consumers value privacy and are willing to pay more to trade with a partner that maintains privacy,
- consumers differ in their valuations of privacy, and
- providing privacy is costly due to security costs and forgone revenues from sale of personal information.

Then

- privacy can be viewed as an element of product quality, and
- there are several existing models of quality provision on which to draw.



# There are two cases to consider.

- It is costless to provide to offer a continuum of different privacy levels simultaneously.
- Fixed costs make it costly to offer multiple privacy levels.

# When variety is free, a competitive market is best.

- A competitive market will offer a full range of privacy levels, each at marginal cost.
  - Other side of the market will select efficient privacy level.
- A monopolistic supplier may distort the menu of privacy choices to sort consumers.
  - Allows the monopolist to extract transactions surplus more fully.

Now, suppose that variety is costly...

# Two Central “Findings” of the Common Sense of Privacy

- Profit-maximizing firms undersupply privacy when they have market power.
- Profit-maximizing firms generally undersupply privacy because consumers can't get organized to stop them.

# A profit-maximizing monopolist may provide too much or too little privacy.

- Problem arises from marginal versus average consumer's preferences for privacy (Spence again).
  - If the marginal customer values privacy by less than the average customer, then privately set privacy standards will be inefficiently lax.
  - If the marginal customer values privacy the same as does the average customer, then privately set privacy standards will be efficient.
  - If the marginal customer values privacy by more than the average customer, then privately set privacy standards will be inefficiently stringent. (This would be the relevant case if the early adopters of the monopolist's service were the people who cared least about privacy.)
- The exercise of monopoly power in the *sale* of personal information might actually improve privacy.

# Policy Implications

- The free-market outcome is not always efficient.

⇒ There may be scope for beneficial governmental intervention beyond contract enforcement.

However,

- the same factors that limit the effectiveness of market forces can also limit the effectiveness of government intervention.
  - Many of the market distortions are due to private information and/or transactions costs rather than market power.
- To what extent are privacy regulations motivated by paternalism?



# Privacy 2.0

# With friends like these, who has privacy?

- Do our friends need privacy policies?
- Should social-network platforms impose limitations on users to substitute for contracts among friends?
- Should the government impose limitations on social-network platforms to substitute for contracts among friends?



Conclusion



# Summary

- Privacy can be efficient even absent a taste for privacy.
  - Chicago view is incorrect.
- The market outcome can entail too little privacy in terms of hard information transmitted to trading partners.
- Property rights are not “the solution” to too little privacy even if consumers are well informed and rational.
  - Assigning property rights to personally identifiable information may make no difference.
  - Government may need to ban asking and/or telling.
- The market outcome can entail too much or too little privacy in terms of provision of information to third parties.
  - Economics of quality and product selection indicate the market will not attain the full-information optimum.
- It can be very difficult for the government to set better privacy standards.