# Privacy and the Clandestine Evolution of Ecommerce

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## ABSTRACT

This note discusses briefly some questions on economics of privacy, especially the relation of privacy to price discrimination, as well as relevant developments in ecommerce and ordinary commerce. Various open questions that call for further research are discussed. In particular, while much interesting theoretical research has been done, and a small number of informative laboratory experiments have been carried out, much more work would be desirable, especially in some areas of behavioral economics, and there is a great unmet need for active monitoring of the marketplace.

## Categories and Subject Descriptors

J.4 [**Computer Applications**]: Social and behavioral sciences; H.4 [**Information Systems Applications**]: Miscellaneous

## General Terms

Economics

## Keywords

privacy, price discrimination, ecommerce evolution

## 1. INTRODUCTION

Privacy is continuing to erode and pricing models are proliferating, often in carefully hidden forms. Two previous papers [15, 18] proposed the thesis that privacy erosion is driven to a large extent by the incentives to price discriminate, and that price discrimination will be the most contentious issue of electronic commerce, as it conflicts with long-standing human concerns about fairness. The purpose of this note is to point out a variety of recent papers on related topics, and to suggest where it would be desirable to undertake further research.

There are many interesting recent papers on economics of price discrimination, and the degree to which it might be stimulated by privacy erosion that would give sellers information about buyers, such as [2, 3, 5] and the papers referenced there. (See also [1] for more general information about economics of privacy.) But these studies are limited in that they are almost all in the conventional economic model, with individuals having well-defined valuations for goods and services, and trying to maximize their utilities. (The "rational agents" or *Homo economicus*.) But, as the next section discusses, people often behave contrarily to this standard economic model, and other, behavioral economics aspects, often play a major role or even dominate. Thus it is desirable to study more detailed models that take this into consideration.

Privacy is usually among the major concerns that people express about the Internet. Yet there are an increasing number of careful studies (such as [11] and the papers referenced there) that appear to show that in general people in general do not value their privacy highly. This confirms the overwhelming evidence from the marketplace, where privacy technologies languish because practically noone bothers to use them, and often intimate information is given out for very little or no monetary reward. But it is not clear how much one can conclude from such studies about future reactions to continuing privacy erosion. The real issue is not privacy as such. It is how information about a person is used. People do not mind their family and friends knowing a lot about them, since such information is expected to be used in helpful ways, such as selecting an appropriate gift for a birthday. Where they do get upset is when intimate information about them is used against what they perceive as their interests. That is why many divorces are so bitter, or why (very rich) people get so upset about the butler who "tells all." And that is likely why there is so much concern about Google, how it will use the information it collects. Thus what is desirable is to undertake further studies that explore how people react to loss of privacy in situations where such loss can lead to noticeable economic effect, such as being subject to discriminatory tariffs.

But what is needed more than anything else are tools for monitoring the market, to see what is happening. It is clear that price discrimination is the driving force behind many moves that powerful players are making, such as the fight against "net neutrality," where the telecom service providers would like to charge according to the nature of transmissions. (Interestingly enough, they have largely attained another goal, namely state video franchising, which enables them to deploy fiber only to those portions of the community they regard as profitable to serve. This overturns about


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a century of practice where service providers had to provide equal access to everyone in a community, one of the frequent measures we see in history to avoid discrimination. But that brings us back to the early days of telephony, where access and price did often depend on location, see for example [10].) But how much else is going on in the variety of other industries? Companies tend to hide what they do, most likely because of the implicitly understood fear of consumer backlash, and potential government intervention. When one reads the comments by prominent and powerful business leaders on a Harvard Business School case study that deals with use of delicate personal information [6], one is struck with the wide concern about violating customer trust. Thus is it natural that most companies would move very carefully in this area, and do it as secretly as possible. But sometimes the incentives to exploit erosion of privacy prove so strong that some fringe players' clandestine tactics do come to the surface. As one example, a story about a car dealer network that targets the poor explains [12]:

> Unlike traditional dealers, Byrider doesn't post prices-which average $10,200 at company-owned showrooms-directly on its cars. Salesmen, after consulting ARE, calculate the maximum that a person can afford to pay, and only then set the total price, down payment, and interest rate. Byrider calls this process fair and accurate; critics call it "opportunity pricing."

What we lack are tools for measuring how often such tactics are used, in what settings, and how to model the decisions that are taken. While there is much insightful research available, considerably more is required, especially in some areas, as is suggested below.

## 2. TAIL THAT WAGS THE DOG

The *Homo economicus* of the standard economic models is a useful construct, but very limited, especially where privacy and price discrimination are concerned. In that area issues of fairness, user preferences, and effects of different pricing models on usage, are often more important.

Fairness, which does not enter into standard economic models, has been of central importance to all human societies, and underlies much and likely most of the frequent and often very strong opposition to price discrimination. (Recently it has been shown that even some monkeys exhibit strong negative reactions to discriminatory treatment in economic transactions.) Law makers and common law judges have historically responded to the conflict between the economic incentives to price discriminate and human dislike of the practice by crafting compromises, such as common carriers rules. Many of the current concerns about net neutrality are reruns of similar concerns centuries ago. As just one example, in 1842, in the early days of railroads, "complaints [were] made of the mode ... practiced by railway companies charging a cheap fare for the whole extent of the line, but varying it in a very disproportionate manner to passengers who have to alight at intermediate stations. ... These [appeared] to be some of the old tricks of coach proprietors, ..." [21]. (For more detailed discussion of the historical experience of price discrimination in transportation, see [19]. Note that this quote demonstrates the fact, still not widely accepted, that it is possible to have price discrimination in a competitive market, such as that of coaches.) As is outlined in [18], the Interstate Commerce Act of 1887, the first serious intrusion of the United States federal government into conduct of commerce, was an attempt to curtail discriminatory practices by railroads.

The precedent of railroad regulation is worth keeping in mind when evaluating possible reaction to discriminatory pricing. Even though people do not use privacy-protecting technologies, they do have an expectation of privacy (even if that expectation depends a lot on age and culture and may be changing), and can invoke governments' aid to obtain it. A very interesting example is that of the forceful lowering of roaming rates for mobile calling in Europe [4]. As has been widely recognized by experts, even if it is not stated publicly, the high roaming rates are another example of a competitive market leading to discriminatory pricing, based on the presumed high valuation that travellers place on being able to call home or office in their country of origin. It is easy to defend it on standard economic grounds, yet the practice is being curtailed due to public pressure. And note that this pressure exists, even though Europeans can to a large extent avoid those high roaming charges by buying separate SIM cards in the countries they visit. But just as consumers in many other settings don't bother to implement privacy technologies, even when those are inexpensive, these mobile subscribers use political means to eliminate practices they regard as offensive.

It thus seems very desirable to study much more deeply not just the nature of human concern for fairness, but how it affects perception of various pricing models. There are now a few studies, such as [20], on this topic, and in particular on how one can formulate discriminatory pricing plans so as to alleviate consumer concerns. Unfortunately, these studies are few, and it would be extremely desirable to extend them.

Compared to fairness in commerce, the literature on user preferences for flat rates is larger and is growing. This preference shows itself in willingness to pay more, often considerably more, for flat rate pricing than for metered services. Much of that literature is surveyed in [13]. However, in common with almost all of the published works in this area, that paper does not mention the pioneering and very careful studies done at AT&T in the 1970s (references for that work are [22] and other papers cited in [9]). Those AT&T studies explored the reasons overwhelming majorities of low-usage telephone customers stuck with flat rates in the 1970s even when they would have saved by switching to metering. The published literature also largely ignores the massive evidence from the history of communications of the preference for flat rates, see [16, 17]. That history includes incidents such as the famous boycott by AT&T customers in Rochester, New York, in 1886, when they were moved to metered rates. (The boycott forced AT&T to change its policy and restore flat rate pricing within 18 months.)

While studies of user preferences for flat rates are proliferating, there is still very little attention paid to another very important factor, namely the effect of flat rates on usage. There is again massive evidence from the history of communications, as well as from other fields, such as transportation, that flat rates stimulate usage, [9, 14, 16, 17]. In recent and grossly underappreciated history, the explosive growth of the Internet in the United States in the late 1990s was stimulated by the switch of Internet Service Providers (ISPs) to flat rate pricing plans. The key move was the introduction of flat rate pricing by AT&T WorldNet in 1996. This move

forced AOL, the most prominent ISP, to switch to flat rates in the fall of 1996, and the rest of the industry followed. The average time spent online per user on AOL tripled over the following year, and continued climbing afterwards, see [17] for data. (Interestingly enough, AT&T WorldNet customers represented a different demographic, and their usage did not increase after they moved to flat rates, they simply and happily paid more than if they had stuck to the metered pricing plans, see [8].) And it should also be mentioned that ISP flat rates would not have had the huge stimulating effect on Internet penetration and usage if local calling had not been paid for on a flat rate basis by most United States users.

More recently, United States has become the world leader in mobile telephony, when measured in the average amount of time subscribers spend using their cell phones. Average usage is almost 25 minutes per day, as opposed to about one fifth of that amount in much of the rest of the world [14, 16]. This resulted from the introduction of the AT&T Digital One-Rate in early 1998, which offered a block of time for a fixed price, with no roaming or long distance calling charges. Until the introduction of this plan, and its imitation by other service providers, United States cellular usage was about typical for the world. Now in many contexts, it is desirable to decrease usage (for example, consumption of electricity, which is often associated with negative externalities of pollution and displacement of people). However, in many contexts, especially in ecommerce and telecommunications where marginal costs are low, stimulating usage is desirable for producers and service providers.

Interestingly enough, the introductions of flat rates by AT&T WorldNet and block pricing by AT&T Wireless were done without any knowledge of the extensive experience AT&T had had with flat and block pricing plans in its past, and without understanding what the consequences would be. And the revolutionary developments those introductions produced are still almost completely neglected.

The basic point of the examples cited above is that factors outside the standard economic models are often far more influential than what those models suggest.

# 3. CONCLUSIONS

The point of the discussion above is that the rapidly growing literature on price discrimination in the standard economic model should be supplemented by much more work on behavioral economic issues, especially fairness, preferences for flat rates, and usage effects of different pricing models. And, to be able to predict how ecommerce will evolve, and to deduce how much different incentives contribute to what happens in the marketplace, it will be necessary to build models that incorporate all these factors. But to help in constructing such models, and in verifying them, it is critical to obtain data. And that is where the greatest gap is, in the lack of systems for monitoring the market, to see what kind of pricing models are being used, and to what extent privacy erosion is used to facilitate price discrimination.

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