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David Reinstein

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The Government May Want to Encourage Price-Discrimination by Income

- *David Reinstein*¹

Abstract

Governments have unique private information about individual incomes. This suggests a new policy tool: consumers can be offered an “OpportunityCard” certifying their income, and firms can be allowed to price-discriminate on this basis. This is politically appealing: it should reduce consumption inequality through the use of market mechanisms, rather than through taxes and spending. However, the efficiency consequences are theoretically ambiguous. I propose a pilot field experiment to provide empirical evidence on output, efficiency, and practical issues.

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¹Department of Economics, University of Essex. Drein@essex.ac.uk.

Introduction

In recent decades the media have focused on two stories that fall squarely in the Econ 101 wheelhouse:

1. Economic forces have led to greater income and wealth inequality within wealthy countries, which government policies have been unable to redress.
2. Firms are increasingly differentiating their offerings and prices to each consumer; powered by “big data” and web tracking, and this has raised both privacy and equity concerns.²

Academic economists have responded to both trends. The growing body of work on inequality is well-known. While (third-degree) price discrimination has until recently been considered a *passè* topic, several papers have recently appeared in top journals.³

Although these two topics appear unrelated, price discrimination may play a valuable role in addressing inequality. Governments have access to an extremely important piece of private information: consumers' income, wealth, and family situation. Policymakers could certify this information in an “OpportunityCard” (OC) and allow firms to charge different prices on this basis; I call this “Income Based Price Discrimination” (IBPD). As poorer consumers naturally have a lower willingness-to-pay for most goods and services, they would tend to benefit from discounts, while wealthier consumers would typically be charged more.

Benefits and costs

This will not necessarily yield an efficiency gain.⁴ The impact of third-degree price discrimination on consumer and total surplus has long been known to be ambiguous; recent work confirms the fundamental indeterminacy of the effect.⁵ The benefit is a potential output effect -- new markets may be served; furthermore, in the presence of second-degree price discrimination, quantity/quality distortion may be reduced. The harm is to exchange efficiency, i.e., to the way a given output is allocated: those in an identifiable high-valuing group will tend to be charged more and consume less, while those in the low-valuing group will get a discount and consume more. The *net* effect depends on demand curvature and heterogeneity; several authors have derived conditions under different specifications; however, little empirical evidence has been presented.⁶

Furthermore, the *redistributive* consequences of an OpportunityCard might be achieved more directly by taxes and transfers. In the framework of Diamond-Mirrlees, there is a tradeoff between redistribution and efficient labor supply. A large literature on optimal taxation has extended this. Recent models⁷ note that nonlinear (perhaps progressive) commodity taxes may do a better job at this than standard income taxes. Broadly speaking, we want to more heavily tax (i) goods that are complementary to leisure, and (ii) goods that are more attractive to higher-skilled agents who choose to work less than would be efficient. The differentiated prices stemming from an OC will be akin to a nonlinear commodity tax. However, as the goals (hence the “mechanism design problem”) of the seller is distinct from that of the social planner, we do not know whether these prices will move incentives in the right or the wrong direction.

Thus, the main benefits of the OC must come either from:

- (i) efficiency gains that depend on unknown demand parameters,

²“[Big data is coming for your purchase history - to charge you more money](#)”, *The guardian*, 2015; “[Websites Vary Prices, Deals Based on Users' Information](#),” *the Wall Street Journal*, 2012; “[Different Customers, Different Prices, Thanks To Big Data](#)”, *Forbes*, 2014; “[Big Data Is an Economic Justice Issue, Not Just a Privacy Problem](#)”, *Huffington Post*, 2015; “[The Government's Consumer Data Watchdog](#),” *The New York Times*, 2015.

³In particular, Cowan (2012); Aguirre (2008); Aguirre et al. (2010); Bergemann et al. (2014).

⁴I am preparing an accessible outline of the application of this theory to IBPD: email to request.

⁵The seminal paper is Robinson (1933). Bergemann et al (2014) offer the most comprehensive analysis to date.

⁶Some papers have presented empirical evidence for specific instances (e.g., Courty and Pagliero, 2012 for second-degree price discrimination); but these do not focus on implications for quantity or (consumer) surplus.

⁷ See Cremer & Gahvari (2002) and Saez (2002).

- (ii) the ability to overcome political and practical barriers to welfare-enhancing redistribution, *or*
- (iii) additional social and institutional benefits (discussed below).

Additional benefit: Incentive to report

Having an OpportunityCard may lead to increased purchasing power, hence encourage (poorer) people to report their incomes. Many countries with a low level of institutional development and social trust struggle to maintain systems of income taxes, benefits, public goods provision, and employment regulation. Where welfare and social insurance programs are difficult to establish, the “carrot” of IBPD may bring people out of the black market and into the formal system.

Additional benefit: Integration

As discounts are likely to be offered to those with lower incomes, the OpportunityCard will make it more likely that people with different incomes will shop, consume, vacation, and socialize in the same places. There may be important positive externalities to this. For example, an analysis of speed-dating choices by Michele Belot and Marco Francesconi suggests that assortative mating largely stems from the greater contact between people of the same socioeconomic class, rather than from preferences. Thus, greater “class mixing” in consumption may lead to more cross-class fraternization, and hence reduce inequality.

Anticipated questions

1. Why would firms want to offer discounts to the less-wealthy? Why would they want poorer consumers?

They would do this primarily because segmenting consumers would be *profitable*. They could gain an additional market -- the less-wealthy -- without having to reduce their prices for their existing, wealthier customers. Through the OpportunityCard they will be able to identify these less-wealthy consumers without extensive digging into demographic and behavioral indicators, without having to offer products of differing quantities and qualities just to get consumers to “self-select,” and without requiring consumers to jump through hoops of complicated loyalty schemes and coupon clipping.

Some status-conscious firms want to be known for appealing to wealthier clientele; others prefer to avoid serving poor customers, seeing them as troublesome and difficult. These “snobbish” firms will not offer OC discounts. But many more *will* do.

2. Why would wealthier people go along with this knowing they would be charged more?

Higher-income consumers would not typically benefit from getting an OpportunityCard, and they would not need to show a card. As with existing loyalty cards, firms will have a “regular” price for those not showing this card. They may offer discounts to those who do show a card, or to those whose card shows their (adjusted) income is below some level.

3. Wouldn't rich people just get poor people to buy on their behalf?

To the extent that arbitrage is costless, price discrimination is impossible. Merchants will anticipate this, and will only tend to give discounts where they do not expect this to occur. Still, there is a wide range of goods and services where arbitrage is difficult or impossible, and we do see some differential pricing. For example, airlines offer various menus of prices, and supermarkets offer complicated bargains and personalized coupons. We do not typically see large groups of people standing outside of supermarkets buying and selling from one another, or re-selling mayonnaise on EBay.

4. If this is profitable and practical, why is it not already being done?

This is a natural question for any new proposal; economists believe that money is not left on the table. While some discounts *have* been offered based on income, these have mainly been for public services, utilities, and products provided by nonprofits, such as local authorities and schools and universities. These are usually justified based on social — rather than profit — motives.

Even if IBPD is not a “new idea under the sun”, several obstacles may have limited its use; some of these may be removed by government. The legal and regulatory environment (in the USA and elsewhere) for price discrimination is complex and often opaque, and consumers often perceive unfairness.⁸ There are important concerns about privacy and verification of income. There are also practical barriers: while loan guarantors often ask for proof of (high enough) income, and US universities base financial-aid on parents’ (having low enough) income, these are big-ticket items in already bureaucratic environments. Verifying income may be too cumbersome for individual smaller transactions. Even if a private organization could verify income, there may be a free-riding problem: the firm that pioneered the OpportunityCard might not capture all of the resulting profit.

A Proposed Field Trial

As noted, theoretical predictions are ambiguous for many key outcomes, including output, consumer welfare, and social welfare, and there is little relevant empirical work. A policy trial run as a controlled field experiment could provide evidence on critical parameters and outcomes for relevant domains. E.g., in industries and markets where IBPD is possible, how would an OpportunityCard affect outcomes?

Practical questions

1. Would its administration and verification be practical and feasible?
2. Would it be used by (poorer) consumers, or would it be stigmatized?

Fundamental economic questions

3. Which businesses and products would offer (deeper) discounts to the poor? (This will provide valuable information on relative price elasticities.)
4. Where it is used, would total trade (output) increase (a necessary condition for a net welfare improvement)?
5. What would be the welfare consequences? (These could be estimated in the context of a structural model.)

There are several options for a field trial. For the practical questions (1 and 2) a “proof of concept” trial would be sufficient. For the deeper economic questions (3–5) a randomized treatment and control difference-in-differences approach may be ideal.

As in all field experiments, a data collection strategy will be critical. Fortunately, some measures of aggregate sales, prices, and output are already collected for taxation, regulation, inflation-calculation, and regional/national accounting purposes.

Treatments

The trial should involve the selective introduction of the OpportunityCard, or another means of verifying, allowing, and perhaps encouraging IBPD. As noted, this information is already available to most governments, and no individuals would be required to release any additional information unless they *chose* to obtain such a card.

⁸ A recent report from the Annenberg Center finds that a majority of American internet-users “do not know it is legal for an online [or offline] store to charge different people different prices...” and 76% agree that “it would bother me to learn that other people pay less than I do for the same products.”

For this trial to be effective, communication is crucial. The administrators should clearly explain the benefits to consumers, and clarify the legal and regulatory environment to businesses. They may organize a web site for merchants to advertise their discounts. This need not be costly: in fact, this may generate revenue through advertising and certification.

To allay political, legal, and business concerns, the card's use could be restricted as necessary. For example, its use could be limited to certain products, and constrained to offer discounts only to those with *lower* incomes. For privacy and modesty reasons, the cards could reveal only income *ranges* or numbered categories. To serve public goals, the cards might report adjusted-income bands, perhaps favoring larger households or military veterans.

There are several possible margins on which to (block) randomize treatments and controls. OpportunityCards could be issued to a random selection of consumers, towns, or regions, or gradually introduced to one area (or industry) at a time. Care should be taken that the randomization ensures comparable treatment and control groups, and that the unit of randomization corresponds to a unit where data can be collected.

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