**Who Benefits from Price Discrimination?**

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1. **Research Overview**

Who suffers from price discrimination and who benefits from it? The conventional wisdom has so far been that the richer consumers cross-subsidize their poorer counterparts, because the former have higher willingness to pay (WTP) than the latter. Yet, evidence on the effect of scarcity on consumers’ choices and decisions implies a potentially troubling form of regressive redistribution, whereby revenues from consumers who suffer from scarcity of time and money might be keeping prices low for consumers who do not suffer from excessively limited resources. Our proposed field experiment is targeted at empirically testing this prediction for the first time. If this prediction bears out, legal intervention may be desirable since market forces alone will fail to provide a solution.

1. **Background and Motivation**

It is already well-known that sellers often engage in price discrimination. In order to increase profit, they set higher prices for certain types of consumers, and lower prices for others. In recent years, price discrimination has flourished in consumer markets: Uber, Amazon, Staples and many other companies were found to vary price by geographic location, spending habits, time of day, and even the likelihood that consumers would engage in comparison-shopping before making their purchasing decisions (Bar-Gill, 2018).

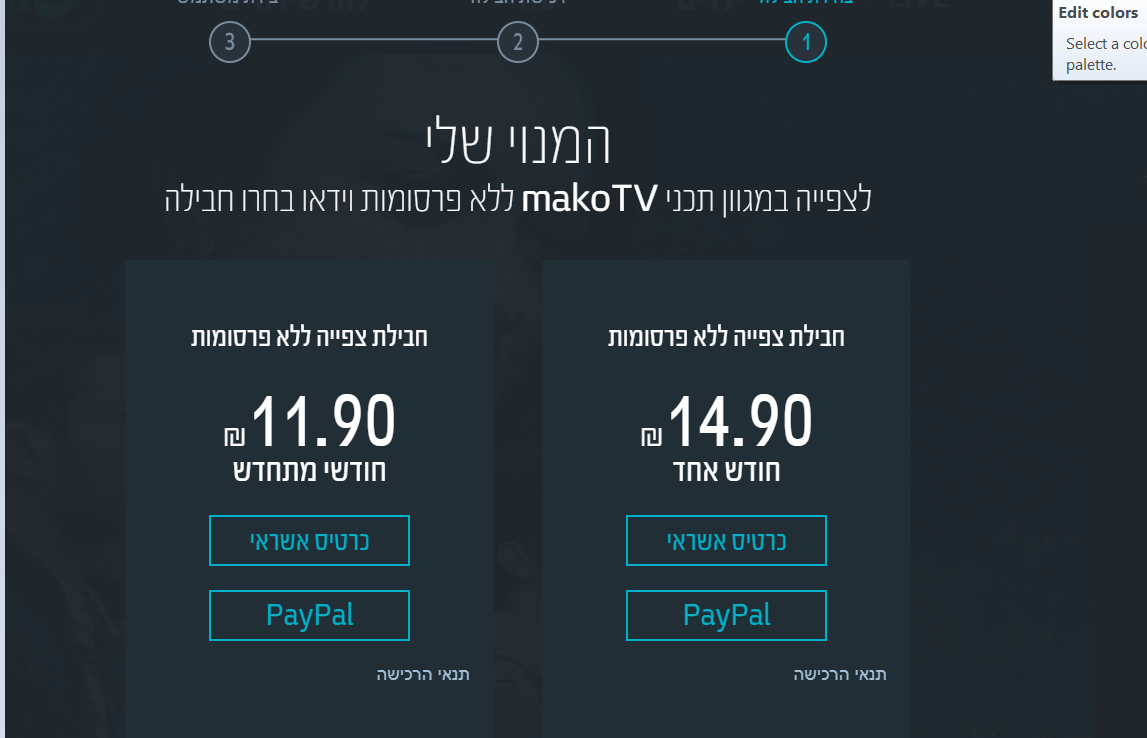
In order to engage in price discrimination, the seller has to identify consumers' willingness to pay (WTP), which is derived from each consumer's preferences and budget constraints (e.g., Bar-Gill 2018; Porat & Gilo 2006). Consequently, the standard assumption is that high-income consumers (who typically have higher WTP) often cross-subsidize lower-income consumers because the former are able (and willing) to pay more for the same product or service, and are less likely to invest time in searching for lower prices (e.g., Masson & Wu, 1974; Philips, 1983). For example, Hal R. Varian, chief economist of Google and professor emeritus at the School of Information at the University of California, Berkley, once explained that price discrimination is "largely beneficial" because "you charge higher prices to people who can afford to pay higher prices."[[1]](#footnote-1) Similarly, when discussing price discrimination through the use of coupons, Porat and Gilo have observed that “on average, people who spend time collecting coupons are less willing to pay than people who do not do it, and only the former group will get lower prices.”[[2]](#footnote-2) Porat and Gilo similarly suggested that consumers who are charged higher prices “are probably the ones who care less about their money or care more about their time (or just careless?), and therefore are more willing to pay.”[[3]](#footnote-3) If this is indeed an accurate account, price discrimination may have a progressive effect, leading to a more equal redistribution of resources by extracting more from the rich than from the poor.

Yet, recent empirical findings pertaining to the effects of scarcity on people's judgments and decision-making cast doubt on this prevailing assumption. For example, Mullainthan and Shafir have found that scarcity creates distinct psychological barriers for people who struggle to manage with too little resources (Mullainathan & Shafir, 2014). As their findings reveal, busy people fail to manage their time efficiently for the same reasons the poor fail to manage their money: Scarcity changes how people allocate attention, leading them to engage more deeply in some problems while neglecting others. For example, it has been shown that scarcity leads to attentional shifts that can help to explain behaviors such as over-borrowing (e.g., Shah et al., 2012).

Building on this literature, we hypothesize that price discrimination could have problematic distributional consequences. It could lead the busier and poorer consumers to cross-subsidize their less busy, higher-income, counterparts, making the poorer and busier consumers worse-off than they otherwise would have been absent price discrimination in the market.

This prediction may be particularly true in the context of price discrimination techniques which target consumers’ limited attention or cognitive overload. These forms of price discrimination are more subtle and complex than merely offering different prices to different segments of consumers, and they include the use of multiple price dimensions, bundling of products, or the use of low introductory rates followed by automatic renewals with higher rates (see, e.g., Narashimhan, Chakravarthi, 1984; Tirole, 1988; Zamir & Teichman, 2018, ch. 8; Bar-Gill, 2006; Porat & Gilo, 2006; Gerstner & Hess, 1991; Varian, 1980).

Such marketing techniques often affect both the actual and perceived price of the transaction. For example, automatic renewal of gym memberships or cellular packages affect the actual price, because consumers might fail to opt out of the provided service and end up paying more than they would otherwise pay due to inertia or limited attention, but they also affect the *perceived* price, because consumers might over-optimistically assume ex ante that they will remember to cancel the transaction once it is no longer beneficial for them. For example, take Mako’s following advertisement:



Mako offers its customers to enjoy online TV shows, while advertising two distinct plans: a monthly plan, costing 14.90 Shekels a month, and an automatically renewed monthly plan, costing 11.90 shekels a month. Of course, these two plans are allegedly supposed to distinguish between consumers who wish to watch the TV online shows for a limited duration (one month), and those who wish to watch the shows for longer periods of time (and hence receive a discounted price). But it has already been shown that such marketing techniques often lead consumers to make inefficient consumption decisions (by failing to cancel their membership or by failing to switch from one plan to another)(see, e.g., Della Vigna & Malmendier, 2006; Bar-Gill & Stone, 2009). For example, Della Vigna and Malmendier have found that consumers who chose a monthly gym membership instead of a pay-as-you-go contract paid, on average, 70% more than they would pay under the pay-as-you-go contract for the same number of visits, and that 80% of the monthly members would have been better off had they paid per visit for the same number of visits (Della Vigna & Malmendier, 2006, at 695). Similarly, Bar-Gill and Stone have found that over 65% of the cellular subscribers in their dataset chose the wrong plan. Some chose plans with an insufficient number of allotted minutes, whereas others chose plans with an excessive number of allotted minutes (Bar-Gill & Stone, 2009).

While the harmful effects of such marketing practices on consumers’ choices and decisions has already been well-documented, the *distributional consequences of such market practices* have so far received limited attention. Who are the consumers who are harmed by these marketing techniques and who are the ones who benefit from them? It is evident that such techniques discriminate between attentive and non-attentive consumers, but who are those less attentive consumers who fail to opt out even though the product or service is no longer beneficial for them? In this project, we wish to explore whether there are demographic differences between consumers who benefit from such techniques and those who are harmed by them.

In the proposed study, we plan to test two distinct hypotheses:

1. Lower-income consumers often cross-subsidize higher-income consumers
2. Busier consumers often cross-subsidize less busy consumers
3. **Methodology and Design**

The proposed research will explore consumers’ actual behavior and analyze demographic differences in consumption patterns through a field study, conducted in collaboration with “Market: Price & Mix,” a coffee shop located in the Tel-Aviv University campus. We have already secured the coffee shop’s cooperation for the proposed study. Our study will consist of 500 participants, all Tel-Aviv university students, recruited via emails that will be circulated to Tel-Aviv university students’ listserv.

Participants will be asked to answer a short survey about their lifestyle and academic studies and to provide demographic data (including age, gender, income, parents’ income, grades, employment history, etc.). The surveys will include items targeted at measuring both participants’ actual (objective) socio-economic background and their perceived (subjective) financial condition, as well as their objective and subjective workload. In return for answering the survey, participants will be awarded two weekly coupons for coffee at “Market: Price & Mix.” They will be informed that each coupon entitles them to five cups of coffee each week. Yet, they will also be informed that these weekly coupons automatically renew, such that they will be charged 35 shekels a week for each weekly coupon, unless they actively opt out. We will then monitor participants’ behavior.

Our empirical analysis will exploit the presence of an “opt out” option and a contractual menu. Our study’s participants will be able to choose between a weekly contract (providing 5 cups of coffee for 35 shekels) and a pay-per-cup option (8 shekels a cup). The weekly contract will be automatically renewed from week to week until the consumer cancels it. This variation in per-usage pricing and renewal procedures will allow us to test the following questions:

Q1: How many consumers fail to opt out of the weekly contract even though it’s not beneficial for them?

Q2: How much money, on average, do consumers pay for a cup of coffee under the weekly contract, compared to the pay-per-cup option?

Q3: Out of the consumers who continue to pay for the weekly membership, how many consumers would be better off opting out?

Q4: Are low-income students more likely to be harmed by the automatic renewal option than higher-income students?

Q5: Are busier students more likely to be harmed by the automatic renewal option compared to students with significantly lower workloads?

If we find, as we predict, that poorer and busier consumers are more likely to continue to pay for the coupons even though they would be better off using the pay-per-cup option, then the question will be what mechanism best explains these results.

So far, the prevailing explanation for consumers’ inefficient consumption behavior in these settings was naivete, over-optimism or over-confidence about future consumption (consumers may over-estimate their future use patterns)(e.g., Bar-Gill & Stone, 2009; Della Vigna & Malmendier, 2006; Gabaix & Laibson, 2006). In order to disentangle the “scarcity” mechanism from the “naivete” mechanism, we will ask participants to answer a survey containing items that measure consumers’ naivete, over-confidence and optimism levels at the beginning of the study. We’ll then be able to control for consumers’ naivete and over-optimism, and disentangle this effect from the “scarcity effect.”

**Expected Contribution**

So far, it has been assumed that price discrimination is not too troublesome because the rich pay more and the poor pay less. Yet, if our findings show, as we predict, that price discrimination indeed often has such regressive effect, harming poor (and busy) consumers the most, legal intervention might be warranted.

Market forces alone could not provide an adequate solution, because competition would only force sellers to discriminate among those who are willing to pay more (the poorer and busier consumers) and those who are not (the richer and less busy consumers). When scarcity drives lower-income and busier consumers to pay more for services and products than they otherwise would if they had more bandwidth, sellers are forced to engage in price discrimination; otherwise, they will lose business and be forced out of the market. Accordingly, ensuring robust competition in consumer markets would not solve the problem. Regulators may therefore need to consider imposing price caps or prohibiting price discrimination altogether. At the very least, regulators could require companies to disclose individual use patterns (see, e.g., Bar-Gill & Stone, 2009). Hopefully such disclosures, if adequately designed and conveyed, could alert the busier and lower-income consumers, informing them that they could save money by opting out of a plan or switching between plans.

# References

* David Gilo & Ariel Porat, *The Hidden Roles of Boilerplate and Standard-Form Contracts: Strategic Imposition of Transaction Costs, Segmentation of Consumers, and Anticompetitive Effects*, 104 Michi. L. Rev. 983 (2006).
* Oren Bar-Gill, *Algorithmic Price Discrimination: When Demand is a Function of Both Preferences and (Mis)perceptions*, 86 U. Chi L. Rev. 2018.
* Robert T. Masson and S. Wu, *Price Discrimination for Physicians’ Services*, 9 Journal of Human Resources 63 (1974).
* Eyal Zamir & Doron Teichman, Behavioral Law & Economics (2018).
* Louis Philips, The Economics of Price Discrimination (1983).
* Sendhil Mullainathan and Eldar Shafir, Scarcity: The New Science of Having Less and How it Defines Our Lives (2014).
* Anuj K. Shah, Sendhil Mullainathan & Eldar Shafir, Some Consequences of Having Too Little (2012).
* Xavier Gabaix and David Laibson, Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets, Quarterly Journal of Economics 505 (2006).
* Tirole, Jean. *The Theory of Industrial Organization*. Cambridge, MA (1988).
* Stefano Della Vigna and Ulrike Malmendier, *Paying Not to Go to the Gym*, 96 American Economic Review 694 (2006).
* Narashimhan, Chakravarthi (1984), “A Price Discrimination Theory of Coupons,” *Marketing Science* 3, 128-47.
* Oren Bar-Gill and Rebecca Stone, Mobile Misperceptions, 23 Harvard Journal of Law & Technology 49 (2009).
* Oren Bar-Gill, *Bundling and Consumer Misperception*, 73 U. Chi. L. Rev. 33 (2006)
* Eitan Gerstner & Kames D. Hess, *A Theory of Channel Price Promotions*, 81 Am. Econ. Rev. 872 (1991)
* Hal R. Varian, A Model of Sales, 70 Am. Econ. Rev. 651 (1980)

1. Natasha Singer, The Government's Consumer Data Watchdog, New York Times, May 23, 2015 (quoting Varian). [↑](#footnote-ref-1)
2. Porat & Gilo, at 994. [↑](#footnote-ref-2)
3. Porat & Gilo, at 995. [↑](#footnote-ref-3)