

## Behavioral economics



### Stefano DellaVigna and U. Malmendier (2006) Paying Not To Go To The Gym

“Saturday 31 December. New Year’s Resolutions. I WILL [...] go to the gym three times a week not merely to buy sandwich.” (Fielding, 1999. *Bridget Jones’ Diary: A Novel*)

A few months later: “Monday 28 April. [...] Gym visits 0, no. of gym visits so far this year 1, cost of gym membership per year £370; cost of single gym visit £123 (v. bad economy).” (Fielding, 2001. *Bridget Jones: The Edge of Reason*)

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## Behavioral economics: the gym



### Paying not to go to the gym

Dear Economist,

My new year's resolution was to get more exercise, so I joined a gym. I'm embarrassed to say that I've hardly been. I have the option to cancel the membership, but perhaps I should keep it as an incentive to get fit?

Janet Taggart, Glasgow

Dear Janet,

Many health clubs offer three types of membership. There is the option for the infrequent visitor - a pass entitling you to, say, 10 visits. Then there is a monthly membership that continues indefinitely until cancelled. This is handy for regulars who may have to move or travel and so want the option of cancelling. There is also annual membership which lapses if not renewed: this is cheaper per month, but less flexible.

Different contracts suit different people, but we almost invariably pick the wrong one. For example, the monthly contract is favoured by people like you, who don't actually show up to the gym. Worse, those hapless suckers are too lazy even to cancel the contract, meaning that many of them would have been better even had they signed up for a year and never gone.

(This insight comes from an excellent paper titled "Paying not to go to the Gym", by economists Stefano DellaVigna and Ulrike Malmendier. Bridget

**Second-degree price discrimination**

<http://www.timharford.com/deareconomist/2006/03/paying-not-to-go-to-gym.html>

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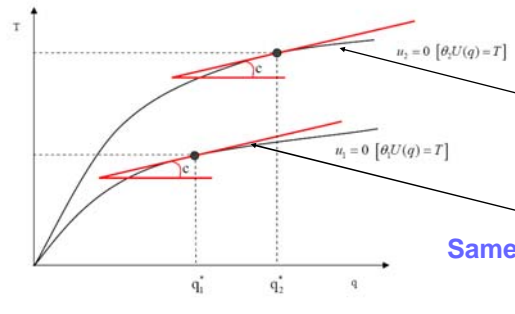
## DallaVigna/Malmandier paper: 2<sup>nd</sup> degree PD



“How do consumers choose from a menu of contracts?”

A model of Second Degree Price Discrimination. Wine seller is able to produce any quality unit  $q$ , at variable cost  $c$ . He asks a quality-related price, depending on the buyer's willingness to pay. Profit is  $T - cq$ .

There are two types of buyers, the L- and the H-type.



Same for L-type

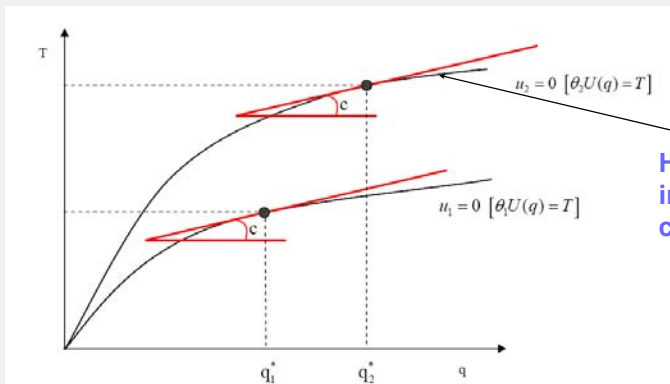
H-type's indifference curve. Along this line, the H-type's utility is zero (=he would be indifferent between accepting and not

## Buyer/Seller model: Starbucks Economics



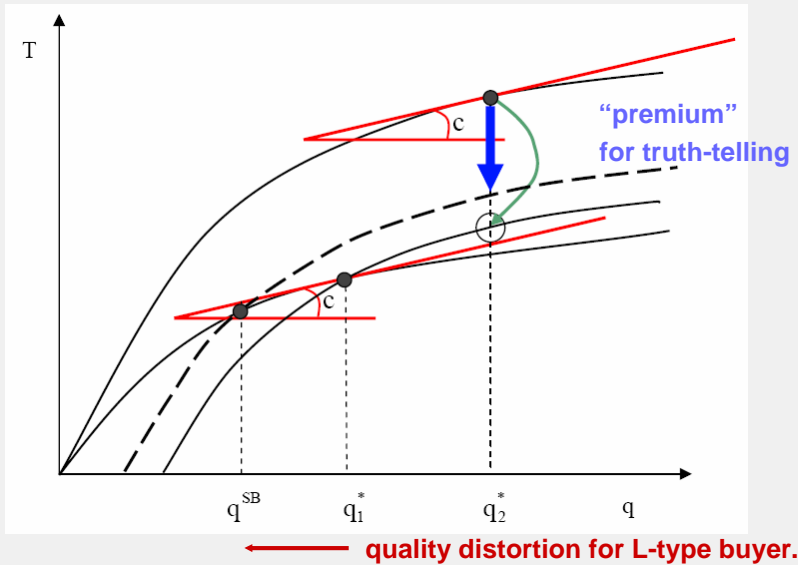
Wine seller is able to produce any quality unit  $q$ , at variable cost  $c$ . He asks a quality-related price, depending on the buyer's willingness to pay. Profit is  $T - cq$ .

There are two types of buyers, the coarse (1) and the high-end buyer (2).



High-type's indifference curve

## Buyer/Seller model when types are unknown: ○○○○○



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## What would a quality distortion help? ○○○○○

**Intuition to solve the problems of 2<sup>nd</sup> degree price discrimination (nonlinear pricing):**

**Seller needs to prevent the unknown high-type from picking the product tailored for the low type (truth-telling “discount”).**

**This separation will be more costly if the high-type should prefer a higher quality (quantity).**

**That is, the seller can tell them apart by offering a menu contract letting the two types choose, but knowing that the H-type is hurt much more by a quality distortion than the L-type.**

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## More generally....



### - Price discrimination has many faces:

Generally, a seller uses different prices for different quantities.

### Market segmentation, differentiation, etc. .

While in 2<sup>nd</sup> degree PD the problem follows from a lack of information, you often have separated markets

- Locational: Books/pharmaceuticals in CAN/US
- Temporary: Hardcover vs. paperback
- Shopping clubs (BJ), frequent flyers (see problem set 1) come with a 'membership fee'

**(here are many examples of quantity discounts)**

- And of course Starbucks

## Back to Starbucks:



### - Where the article is not intuitive:

- 1) Tricky to speak about price-blind customers. What the article means is the H-type. But the H-type is not price blind, she wants better quality for more money, otherwise she mimics the L-type.

**Note that 2<sup>nd</sup> degree PD uses the fact that besides price there is another variable to “screen” through self-selection (menu contracts): quality (or size...).**

**Article tells: Sometimes size is not the better screening variable, if some types are going for better taste. Then, quality and size are negatively correlated....**

## Back to Starbucks:



- Where the article is not intuitive:

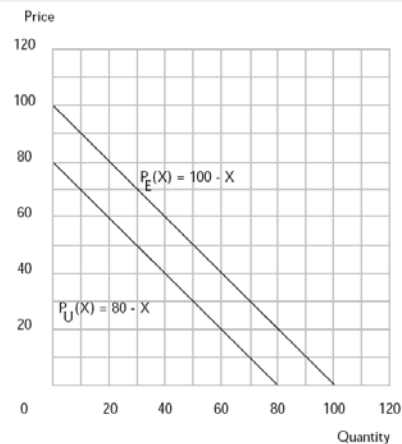
2) Is it true that some types of customers are more embarrassed by asking for the right product they like? Can this be used as a screening device?

It could as well be that Starbucks want to use a cheaper screening device, making customers believe that a smaller coffee is higher quality. So far, they did the opposite to skim according to quality.

Recall that offering one size does not permit the monopolist to skim different WTPs. This is why different sizes make sense (Dunkin' Donut has 4 sizes...)

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## One more example: WB Problem 25.6

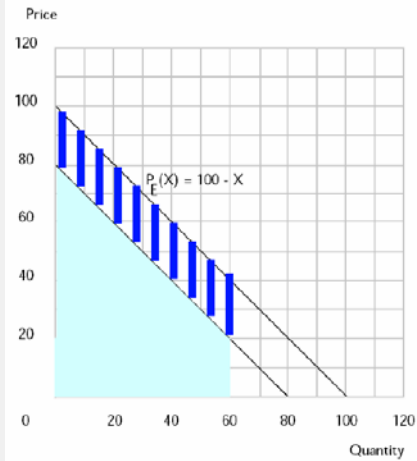


Think along the “intensive margin”: each consumer type buys more than one unit, but has a decreasing WTP (Willingness to pay) for a next unit: The E-type pays 100 cents for the first, 99 for the 2<sup>nd</sup> download etc.

So, the two types are easily told apart: for any increase in downloads the E-type is willing to pay 20 cents more than the S-type.

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## Intuition: solving WB Problem 25.6



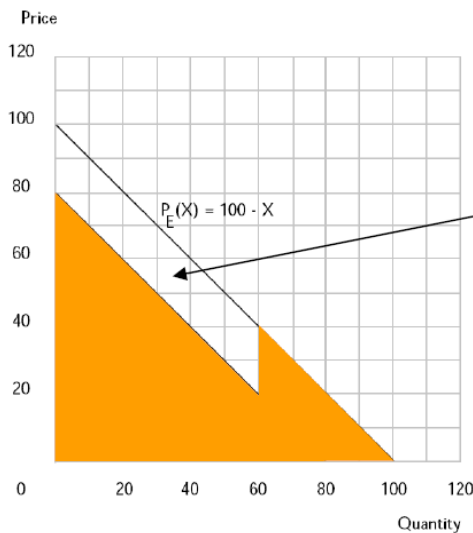
Menu contracting could indicate to sell two sizes: 80 and 100. **But then, to sell any bundle with 100 units the discount to the E-type would be that high that it could be sold for only \$2 more than the 80 bundle.**

**Turns out to be optimal to sell two sizes if there are the same amount of E and S-buyers: sell a bundle of 60 to the students for \$30 (light blue area) and of 100 for \$38, leaving the hatched area as “truth-telling discount.”**

**Result: each type picks the “right” package, this maximizes profit.**

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## What the executives pay



Graphing the new price for executives: The non-colored area under the demand curve reduces from \$16 to \$12 if the two bundles offered are no longer 80 and 100 but 60 and 100.

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