

EE481 Industrial Economics

Price Discrimination

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Case Study (Grabowski and Vernon, 1992)

Does competition always lower price?

- New drugs get patents to grant their monopoly rights.
- But after the patent expires, anyone else can use the formula to produce their drugs (generic brands).
- Grabowski and Vernon (1992) found that after the patent (of 18 major drugs) expires, sale dropped by 50% but price increased 10%.
 - Apparently, there are 2 types of consumers - the loyal and the price-sensitive.
 - The loyals do not switch to generics and are willing to pay more.
 - The patented firm then focus only on the loyal customers -> and charge a higher price.

What you have learned in microeconomics

Price-discrimination = charging the consumers different prices for the same product. (firms would like to extract more consumer surplus)

We examine three questions

- Firms have to have some market power in order to price discriminate.
- Price discrimination can be categorized into 3 types
 - ① First-degree - perfect price discrimination
 - ② Second-degree - price discrimination with asymmetric information
 - ③ Third-degree - local monopoly

Perfect Price Discrimination (First-Degree)

- Firm can identify the willingness to pay of every consumer.
- No dead-weight loss \rightarrow efficient but may not be fair.

Third-Degree Price Discrimination

- Profit-maximizing price for "each group" of consumers. There could be some deadweight loss.

Third-Degree Price Discrimination (maths)

Recall from the derivation of $\frac{P-mc}{P}$ in the SCP chapter.

$$\frac{P - mc_i}{P} = \frac{s_i}{\varepsilon},$$

where mc_i is firm i 's marginal cost, s_i is firm i 's market share in an oligopoly market, ε is the point elasticity of demand (at the equilibrium price).

Second-Degree Price Discrimination

Price discrimination can be categorized into 3 types according to the completeness of information

- 1 First-degree - firm observes the willingness to pay of EACH buyer.
- 2 Second-degree - firm does not observe the willingness to pay of EACH buyer. But knows that different buyers have different willingness to pay.
- 3 Third-degree - firm observes the willingness to pay of EACH GROUP of buyers.

Price Discrimination Mind Map

Second-Degree Price Discrimination

Some forms of second-degree price discrimination

- Two-part tariff
- Multi-part tariff
- Menu of Price or Price schedule
- Bundling, Tie-in sale

Second-Degree Price Discrimination

Second-degree price discrimination is a form of non-linear pricing.

Nonlinear Pricing = consumer's price per unit is not a constant

- Second-degree price discrimination uses the nonlinear pricing method to extract welfare from consumers.

Examples of Two-Part Tariff

Firm changes a lump-sum fee AND a per-unit fee.

Product	Lump-sum	Per-unit fee
Nespresso		
Football Game		
Nintendo Wii		
Printer		
Bank Loan		

Examples of Two-Part Tariff

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Nintendo Wii	Nintendo Wii	Game
Printer	Printer	Ink
Bank Loan	Collateral	Interest rate

A Single Two-Part Tariff

- Suppose there are 2 types of consumers
 - ① the High willingness to pay (high-type)
 - ② The Low willingness to pay (low-type)

Two Two-Part Tariff

- Firms can increase their profits from offering two two-part tariff instead of a single two-part tariff
 - different collateral-interest rate combinations
 - different co-payment and insurance premium combinations
 - offering buffet or a'-la-carte

Consumers' Indifference Curves

Direction of Preference

Low-type vs. High-type Indifference Curves

The low-type usually get most of their surplus extracted

- Suppose there are 2 types of consumers.
 - Type 1 (Low-type) : has a low valuation of the product
 - Type 2 (High-type) : has a high valuation of the product
- First, Suppose the company design a two-part tariff that extracts all surplus from the low-type

If only 1 two-part tariff is offered the high-type buys more q

- Suppose this company offers only 1 two-part tariff (call tariff a) the high-type would maximize their utility by choosing at point B''
 - Type 1 (Low-type): chooses $\{E_1^a, q_1^a\}$
 - Type 2 (High-type): chooses $\{E_2^a, q_2^a\}$

Type 2 has more surplus for firm to extract

- Let's suppose firm would like to extract more surplus from Type 2.
- This can be done by moving the expenditure outlay for type 2 up and up. (Assume Parallel Shifts for now)
- As long as Type 2's indifference curve is below point "A", Type 2 consumer would not choose point "A".
- Firm now offers ONLY "A" and "D", or package $\{E_1^a, q_1^a\}$ and $\{E_2^d, q_2^d\}$.
- You can check that type 1 would choose $\{E_1^a, q_1^a\}$ and type 2 would choose $\{E_2^d, q_2^d\}$.

Firm can maximize expenditure from type 2

- Firm can earn even more expenditure from type 2 if it adjusts the expenditure outlay (to achieve the highest that just touches type 2's indifference curve).
- This usually results in a higher fixed fee and a lower variable fee
- Firm now offers "A" and "C" only, or package $\{E_1^a, q_1^a\}$ and $\{E_2^c, q_2^c\}$.

Can this be done in the real world?

- In the real world, it is hardly possible to figure out what would be the right E and q for each type, let alone there are usually more than 2 types of customers.
- A store membership card that you pay a fixed fee, but get some % discount is a kind of two-part tariff.

Is this a 1st, 2nd or 3rd degree price discrimination?

fares

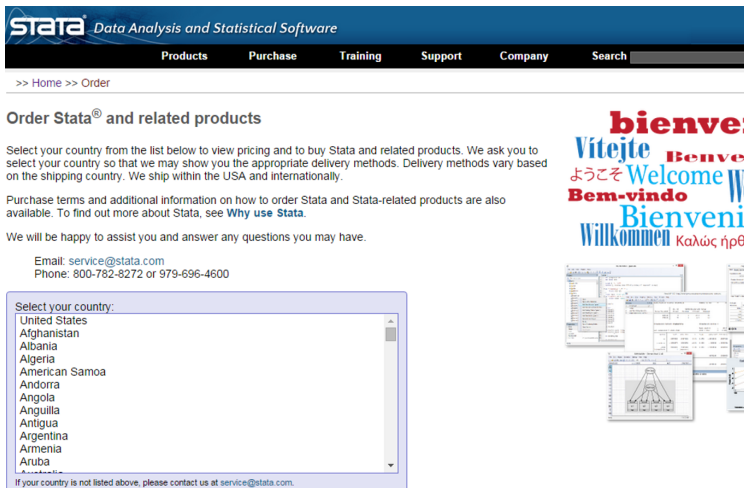
Oxford — London		adult	student* young person 16-26yrs over 60	child 5-15yrs	groups 2 adults 3 children
		single one way ride	£15	£11	£7.50
return same day or next day	£18	£13	£9	£35	
within 3 months	£20	£15	£10	£40	
nightrider go after 3pm return before midnight next day	£15	£11	£7.50		
tube 12 12 singles use within 1 year or 6 months for StagecoachSmart	£70	£60	£35		

Hillingdon — London		adult	child 5-15yrs
		single one way ride	£4
return same day or next day	£6	£3	
tube 12 12 singles use within 1 year	£36		

concessionary tickets are not available between Hillingdon & London

* student of any age must show valid NUS, ISIC or official university photo ID
children under 14 must be accompanied by a responsible adult

Is this a 1st, 2nd or 3rd degree price discrimination?



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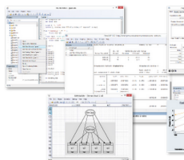
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Is this a 1st, 2nd or 3rd degree price discrimination?

- Different Mobile Internet Packages by Vodafone UK:

Find your perfect plan and phone

Build your own package

The screenshot displays three mobile internet packages from Vodafone UK, arranged horizontally. Each package is presented in a white card with a purple button at the bottom. The 'Red L' package is highlighted with a red 'Popular' banner. Each card includes the package name, data allowance, unlimited minutes and texts, a list of additional benefits, and a link to full details.

Plan Name	Data Allowance	Additional Benefits
Red	1 GB UK data	Unlimited UK minutes and texts You also get: ✓ 3-month Data Test Drive ✓ from 1GB of UK Wi-Fi ✓ Our Price Promise
Red L (Popular)	2 GB UK data	Unlimited UK minutes and texts You also get: ✓ 3-month Data Test Drive ✓ from 1GB of UK Wi-Fi ✓ Our Price Promise
Red XL	4 GB UK data	Unlimited UK minutes and texts You also get: ✓ 3-month Data Test Drive ✓ from 1GB of UK Wi-Fi ✓ Our Price Promise

Is this a 1st, 2nd or 3rd degree price discrimination?

- Kinokuniya Membership Card costs THB 500/year.
- Gives a 10% discount on all full priced books.

Is this a 1st, 2nd or 3rd degree price discrimination?


- iPhone's price drops when the new model comes out.
 - iPhone6 S (pre-order \$649), iPhone6 (\$549), iPhone 5S (\$49 with a 2-year mobile contract).




Practice Problems

- No need to submit this homework. But these problems will help prepare you for the exams.
- ① (Church and Ware) Chapter 5, problem 3.
- ② (Carlton and Perloff) Chapter 4 (problem 8), Chapter 10 (Problem 1 and 5).

Reference and Further Reading I

 Carlton, D.W. and J.M., Perloff.
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Journal of Law and Economics 35: 331-50, 1992.