

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		
PlayStation		
Printer		
Bank Loan		

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 two-part tariff.

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

fares		Oxford — London				Hillingdon — London	
	adult	student* young person 16-26yrs over 60	child 5-15yrs	groups 2 adults 3 children		adult	child 5-15yrs
single one way ride	£15	£11	£7.50		single one way ride	£4	£2
return same day or next day	£18	£13	£9	£35	return same day or next day	£6	£3
within 3 months	£20	£15	£10	£40	tube 12 12 singles use within 1 year	£36	
nightrider go after 3pm return before midnight next day	£15	£11	£7.50		concessionary tickets are not available between Hillingdon & London		
tube 12 12 singles use within 1 year or 6 months for StagecoachSmart	£70	£60	£35		* 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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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 card includes the plan name, data allowance, unlimited minutes and texts, and a list of additional benefits. The 'Red L' plan is highlighted with a red 'Popular' banner. Navigation arrows are visible on the left and right sides of the package cards.


Plan Name	Data Allowance	Additional Benefits
Red	1 GB UK data	<ul style="list-style-type: none"> ✓ 3-month Data Test Drive ✓ from 1GB of UK Wi-Fi ✓ Our Price Promise
Red L (Popular)	2 GB UK data	<ul style="list-style-type: none"> ✓ 3-month Data Test Drive ✓ from 1GB of UK Wi-Fi ✓ Our Price Promise
Red XL	4 GB UK data	<ul style="list-style-type: none"> ✓ 3-month Data Test Drive ✓ from 1GB of UK Wi-Fi ✓ Our Price Promise

Each package card also features a 'Full details' link and a 'Choose a phone' button at the bottom.

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.


KINOKUNIYA CARD
Be rewarded every time you shop.



Receive 10% discount* on full priced books, DVDs and selected figurines in the Comics Department every time you shop with us.

Your Kinokuniya Card can also be used for online and phone orders. Please quote your membership number when placing an order.

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



Mercedes-Benz

Price List

ประกาศใช้ตั้งแต่วันที่ 21 สิงหาคม 2555

(Model)	รุ่น	Engine (CCI)	กำลังเครื่องยนต์ (กิโลวัตต์/ แรงม้า)	Price (THB)
The new generation C-Class				
C 200 BlueEFFICIENCY		1,796	135/184	2,149,000 *
C 220 CDI BlueEFFICIENCY		2,143	125/170	2,499,000
C 200 BlueEFFICIENCY ELEGANCE		1,796	135/184	2,739,000 *
C 200 BlueEFFICIENCY AVANTGARDE		1,796	135/184	2,929,000 *
C 250 CDI BlueEFFICIENCY AVANTGARDE		2,143	150/204	3,180,000
C 250 BlueEFFICIENCY AVANTGARDE		1,796	150/204	3,249,000 *

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

- iPhone's price drops when the new model comes out.
 - iPhone8 (price?), iPhone7, 32GB (\$23,994), iPhone 6, 32GB (11,990)



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.
Modern Industrial Organization. 4th Edition.
Pearson Addison Wesley Press, 2005.
-  Church, J. and R. Ware.
Industrial Organization: A Strategic Approach. International Edition.
McGraw-Hill Press, 2000.
-  Grabowski, H., and J. Vernon. *Brand Loyalty, Entry and Price Competition in Pharmaceuticals after the 1984 Drug Act*.
Journal of Law and Economics 35: 331-50, 1992.