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 -> 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		
Golf Course		
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

	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

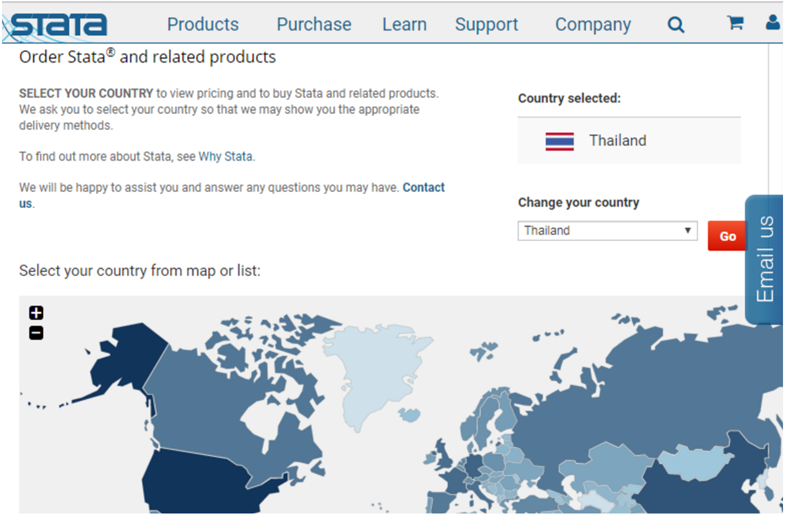
	adult	child 5-15yrs
single one way ride	£4	£2
return same day or next day	£6	£3
tube 12 12 singles use within 1 year	£36	

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?



Price per a single-user STATA SE version license

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

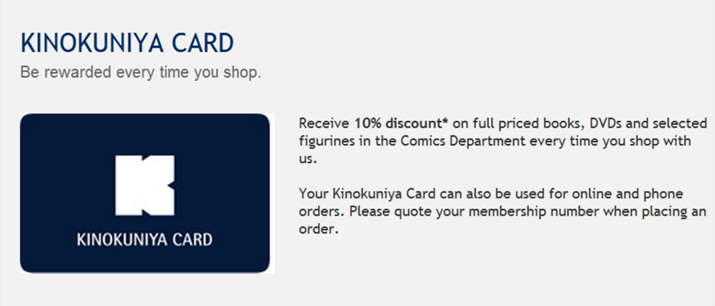
- Different Mobile Internet Packages by AIS Thailand:

SPECIAL! ENJOY DATA-FREE, MOVIES, SERIES & SPORTS STREAMING WITH FULL HD.

Monthly fee (Baht)	Total Internet	4G	4G/3G Non - Stop*	Call All Network (Mins)	AIS WiFi Unlimited	Free! Movies/TV + 4G data
299 Subscribe	1GB	-	1GB	100	✓	1 month
399 Subscribe	3GB	-	3GB	150		
499 Subscribe	7GB	3GB	4GB	200		3 months
599 Subscribe	10GB	4GB	6GB	250		
799 Subscribe	NEXT G Unlimited	5GB	10GB	350		
999 Subscribe		8GB	12GB	450		
1,099		4G Unlimited	3G : 16GB	650	✓	3 months
1,299			3G : 20GB	850		
1,499			3G : 25GB	1,200		
1,899			3G : 30GB	2,000		

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?

- Prices of different iPhones

Practice Problems

- No need to submit this homework. But these problems will help prepare you for the exams.

1. (Church and Ware) Chapter 10 (problem 1).
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 Phamaceuticals after the 1984 Drug Act.*
Journal of Law and Economics 35: 331-50, 1992.