Market Structure, competition and firm strategies

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Learning Objectives

- Familiarize ourselves with Market Structure and Competition.

- Models of product differentiation.

- What tests can we can run to measure the level of competition in a market?

- Recognise how prices are determined in practice.

- Explain why firms sometimes charge different prices to customers for the same product.

- Recognise how pricing varies with each stage in the life of a product.

Suggested Reading:

- **Textbooks**
  - **Chapters 14**, 16, 17 in John Lipczynski, John Goddard and John O.S. Wilson, *Industrial Organization: Competition, Strategy and Policy*, 5th Edition, Pearson Education, 2017

  - Chapter 14, 17, in Sloman, John, et al. *Economics for Business Enhanced*. Available from: VitalSource Bookshelf, (9th Edition). Pearson International Content, 2024.

  - Chapters 12,13,14 and 15 in Michael Parkin, *Microeconomics*, Global Edition, 14th Edition, Pearson Education, 2022

In order to understand the competitive constraints placed on firms in terms of the micro-economic environment in which they operate it is essential to **understand the way firms interact with other firms**.

Interactions are characterized in two ways:

- **Horizontal**: Interactions with firms at the same stage in the production process. Typical concerns include the level of competition and the way firms compete with each other.

- **Vertical**: these are interactions with firms 'upstream' or 'downstream' in the 'supply chain' – concerns here typically concern the distribution of bargaining power in any relationship.

Porter's Five Forces Model
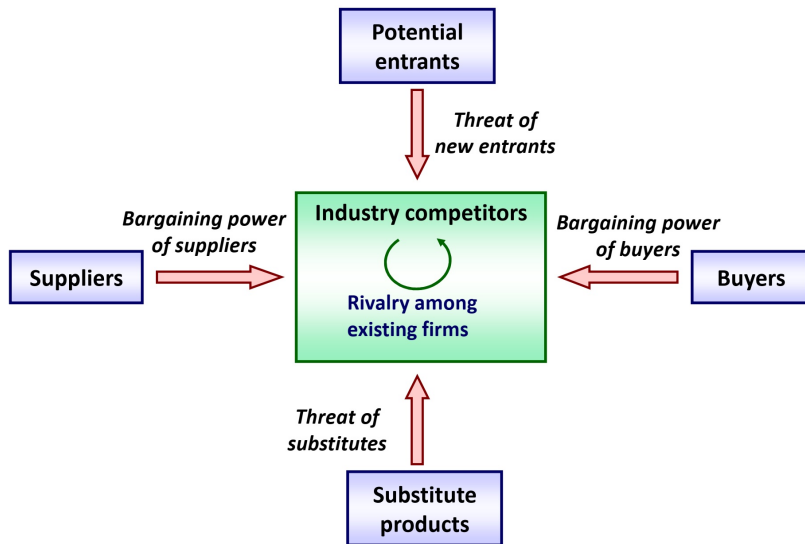
Source: Michael E. Porter Competitive Strategy: Techniques for Analyzing Industries and Competitors, (The Free Press, 1980)

Porter's Five Forces: Rivalry (Horizontal)

- How do the firms present in the market compete against each other? How can we draw differences over the nature of competition?
- Market shares and concentration
- Degree of innovation
- Attempts at product differentiation
- Industry growth
- Presence of exit barriers (why?)

Porter's Five Forces: Potential entrants (Horizontal)

- The market entry by additional competitors poses a threat to profitability of incumbent firms.

- The threat of entry is determined by potential barriers to entry.

- Economies of scale

- Product differentiation

- Capital requirements

- Cost advantage of incumbents

- Access to distribution channels

Porter's Five Forces: Substitutes (Horizontal)

- Substitute products can affect the demand for a given good and may even render entire industries redundant.

- Understanding the degree of substitutability for the products of an industry helps understand the threat by potential substitutes.

- The threat of substitutes can be minimised by:
    - Ensuring cost advantage in the core product
    - Continued product innovation and differentiation

Porter's Five Forces: Suppliers' Bargaining Power (Vertical)

- Bargaining power associated with suppliers will affect the probability that the cost of inputs might increase, or the quality of inputs decreases (both negative changes in the terms of trade). It will be determined by:

    - Relative importance of a particular input in production

    - Substitutability of input goods

    - Level of competition in upstream markets

- It may also be affected by exclusivity agreements suppliers make with horizontal firms (input foreclosure).

Porter's Five Forces: Buyers' Bargaining Power (Vertical)

- Bargaining power associated with buyers will affect the probability that a buyer can 'squeeze' an industry and force it to accept a lower price for its product:

  - Relative importance of industry product in downstream production

  - Substitutability of industry product in downstream production

  - Level of competition in downstream markets (market concentration etc.)

- It may also be affected by exclusivity agreements buyers make with horizontal rivals (customer foreclosure).

Porter's Five Forces: Horizontal

- A good place to start in order to understand the horizontal forces in Porter's model is to consider economic theories of market structure since they provide insights and outcomes relating to:

  - Number of competitors
  - Entry of competitors and barriers to entry
  - How firms compete (price versus quantity)
  - Product differentiation and market segmentation

Market structure and competition

- In order to understand the nature of rivalry between firms it is useful to understand the nature and outcomes of competition.

- The nature and intensity of competition will determine whether entry into a given market is likely to be profitable, in both 'short run' and 'long run'.

- The nature and intensity of competition can frequently be determined by the 'structure' of the market – the number of firms, degree of differentiation, and 'barriers to entry'.

Market structure

- We will look at four different structures – understanding the characteristics of these archetypal markets can help form predictions over long and short-term profitability:

  - Perfect Competition (most competitive, least market power)

  - Monopolistic Competition

  - Oligopoly

  - Monopoly (least competitive, most market power)

- The degree of competitiveness of a market is inversely related to the market power of individual firms within that market

	No. of firms	Entry conditions	Product differentiation
Perfect competition	Many	Free entry	Identical products
Imperfect competition			
Monopolistic competition	Many	Free entry	Some differentiation
Oligopoly	Few	Barriers to entry	Some differentiation
Monopoly	One	No entry	Complete differentiation

- **Perfect competition** is a market in which

  - Many firms sell identical products to many buyers.

  - There are no restrictions to entry into the industry.

  - Established firms have no advantages over new ones.

  - Sellers and buyers are well-informed about prices.

Price Takers

- In perfect competition, each firm is a price taker.

- A **price taker** is a firm that cannot influence the price of a good or service.

- No single firm can influence the price—it must "take" the equilibrium market price.

- Each firm's output is a **perfect substitute** for the output of the other firms, so the demand for each firm's output is **perfectly elastic**.

The Firm's Decisions

- A perfectly competitive firm's goal is to make maximum economic profit, given the constraints it faces.

- So the firm must decide:

    - How to produce at minimum cost

    - What quantity to produce

    - Whether to enter or exit a market

- We start by looking at the firm's output decision.

The Firm's Output Decision

- If **MR** > **MC**, economic profit increases if output increases.
- If **MR** < **MC**, economic profit decreases if output increases.
- If **MR** = **MC**, economic profit decreases if output changes in either direction, so economic profit is maximized.

# The Firm's Output Decision
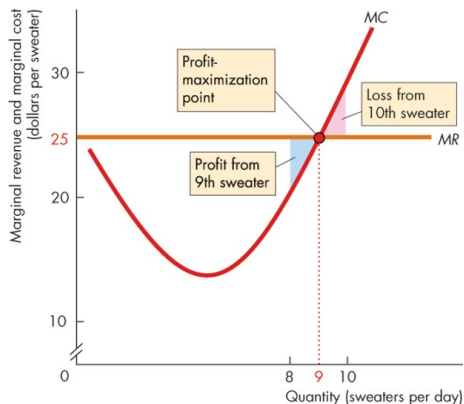
Loss Comparisons

- The firm's loss equals total fixed cost (TFC) plus total variable cost (TVC) minus total revenue (TR).

- Economic loss = TFC + TVC − TR = TFC + (AVC − P) × Q

- If the firm shuts down, Q is 0 and the firm still has to pay its TFC.

- So the firm incurs an economic loss equal to TFC.

- This economic loss is the largest that the firm must bear.

The Firm's Output Decision

- The Figure shows the shutdown point.
- Minimum **AVC**=TVC/Q of a sweater is \$17.
- At \$17 a sweater, the profit-maximizing output is 7 sweaters a day.
- The firm incurs a loss equal to the red rectangle.
- This loss equals **TFC**.

MONOPOLY

Monopoly and How It Arises
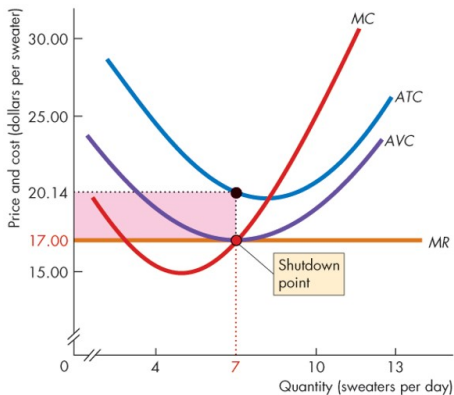
- A **monopoly** is a market:

  - That produces a good or service for which **no close substitute** exists

  - In which there is **one supplier** that is protected from competition by a barrier preventing the entry of new firms.

How Monopoly Arises

- A monopoly has two key features:

    - **No close substitute**

    - **Barriers to entry**

- **No Close Substitutes**

    - If a good has a close substitute, even if it is produced by only one firm, that firm effectively faces competition from the producers of the substitute.

    - A monopoly sells a good that has no close substitutes.

Barriers to Entry

- A constraint that protects a firm from potential competitors is called a **barrier to entry**.

- Three types of barriers to entry are:

    - Natural

    - Ownership

    - Legal

Monopoly and How It Arises: Natural Barriers to Entry

- Natural barriers to entry create natural monopoly.
- A **natural monopoly** is a market in which economies of scale enable one firm to supply the entire market at the lowest possible cost.
- Figure below illustrates a natural monopoly. One firm can produce 4 million units of output at 5 cents per unit. Two firms can produce 4 million units—2 units each—at 10 cents per unit.
- In a natural monopoly, economies of scale are so powerful that they are still being achieved even when the entire market demand is met. The LRAC curve is still sloping downward when it meets the demand curve.
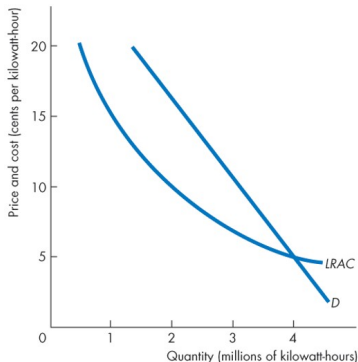
Legal Barriers to Entry

- Legal barriers to entry create a legal monopoly.

- A **legal monopoly** is a market in which competition and entry are restricted by the granting of a:

  - Public franchise (like the U.S. Postal Service, a public franchise to deliver first-class mail)

  - Government license (like a license to practice law or medicine)

  - Patent or copyright

Monopoly Price-Setting Strategies

For a monopoly firm to determine the quantity it sells, it must choose the appropriate price.

**There are two types of monopoly price-setting strategies:**

- A **single-price monopoly** is a firm that must sell each unit of its output for the same price to all its customers.
- **Price discrimination** is the practice of selling different units of a good or service for different prices. Many firms price discriminate, but not all of them are monopoly firms.

Price and Output Decision

- The monopoly faces the same types of technology constraints as the competitive firm, but the monopoly faces a different market constraint.
- The monopoly produces the profit-maximizing quantity, where **MR = MC**.
- The monopoly sets its price at the highest level at which it can sell the profit-maximizing quantity.

Monopoly and Competition Compared

- The market supply curve in perfect competition is the horizontal sum of the individual firms' marginal cost curves, $S = MC$.
- This curve is the monopoly's marginal cost curve.
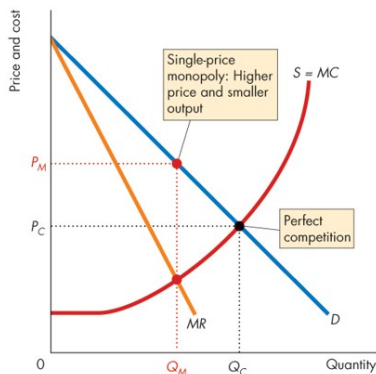
MONOPOLISTIC COMPETITION

What Is Monopolistic Competition?

- **Monopolistic competition** is a market structure in which:

  - A large number of firms compete.

  - Each firm produces a differentiated product.

  - Firms compete on product quality, price, and marketing.

  - Firms are free to enter and exit the industry.

- **Large Number of Firms**

  - Each firm has a small market share and so limited market power to influence the price of its product.

  - Each firm is sensitive to the average market price but pays no attention to the actions of others. So no one firm's actions directly affect the actions of others.

  - Collusion or conspiring to fix prices is impossible.

What Is Monopolistic Competition?

- **Product Differentiation**
  - A firm in monopolistic competition practices product differentiation if the firm makes a product that is slightly different from the products of competing firms.

- **Competing on Quality, Price, and Marketing**
  - Quality includes design, reliability, and service.
  - Because firms produce differentiated products, the demand for each firm's product is downward sloping. But there is a tradeoff between price and quality.
  - Because products are differentiated, a firm must market its product. Marketing takes the two main forms: advertising and packaging.

- **Entry and Exit**
  - There are no barriers to entry in monopolistic competition, so firms cannot make an economic profit in the long run.
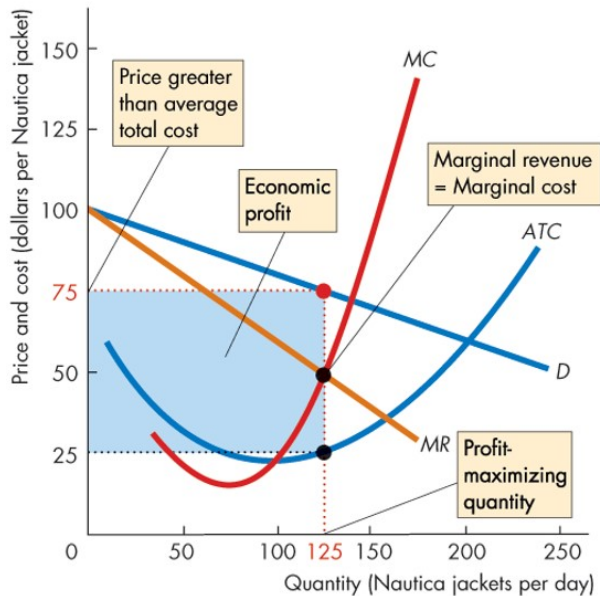
- **Examples of Monopolistic Competition**
  - Producers of audio and video equipment, clothing, jewelry, computers, and sporting goods operate in monopolistic competition.

The Firm's Short-Run Output and Price Decision

- A firm that has decided the quality of its product and its marketing program produces the profit-maximizing quantity (the quantity at which $MR = MC$).

- Price is determined from the demand for the firm's product and the highest price that the firm can charge for the profit-maximizing quantity.

- The next Figure shows a firm's economic profit in the short run.

- The firm in monopolistic competition operates like a single-price monopoly.

- The firm produces the quantity at which MR equals MC and sells that quantity for the highest possible price.

- It makes an economic profit (as in this example) when $P > ATC$.

Price and Output in Monopolistic Competition

Is Monopolistic Competition Efficient?

- Price equals marginal social benefit.

- The firm's marginal cost equals marginal social cost.

- Because price exceeds marginal cost, marginal social benefit exceeds marginal social cost, so ...

- in the long run, the firm in monopolistic competition produces less than the efficient quantity.

Making the Relevant Comparison

- The markup (price minus marginal cost) arises from product differentiation.

- People value product variety, but product variety is costly.

- The efficient degree of product variety is the one for which the marginal social benefit from product variety equals its marginal social cost.

- The loss that arises when excess capacity is offset by the gain that arises from having a greater degree of product variety.
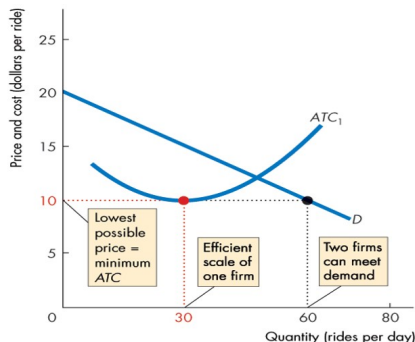
OLIGOPOLY

What Is Oligopoly?

An oligopoly is a market structure in which

- Natural or legal barriers prevent the entry of new firms.

- A small number of firms compete.

Barriers to Entry

- Either natural or legal barriers to entry can create oligopoly.
- Figure shows two oligopoly situations.
- In part (a), there is a natural **duopoly**—a market with two firms.

(a) **Natural duopoly**

What Is Oligopoly?

- In part (b), there is a natural oligopoly market with three firms.
- A legal oligopoly might arise even where the demand and costs leave room for a larger number of firms.
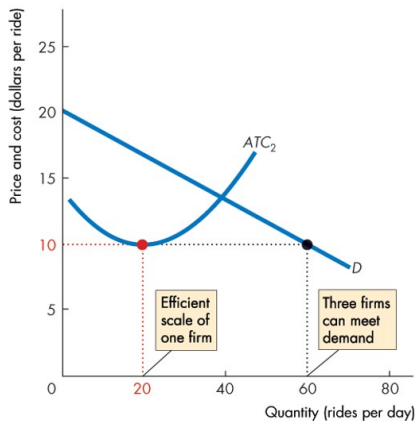
(b) Natural oligopoly with three firms

What Is Oligopoly?

Small Number of Firms

- Because an oligopoly market has only a few firms, they are interdependent and face a temptation to cooperate.
- **Interdependence**: With a small number of firms, each firm's profit depends on every firm's actions.
- **Temptation to Cooperate**: Firms in oligopoly face the temptation to form a cartel.

Non-Collusive: Duopoly's

Collusive: Cartels

- A **cartel** is a group of firms acting together to limit output, raise prices, and increase profit. Cartels are illegal, though we have regulated cartels eg. OPEC.

- **Cournot Model**:
  Firms compete by **choosing quantities simultaneously, assuming the quantity chosen by their competitor is fixed**, *leading to a stable equilibrium where neither firm can increase profit by unilaterally changing its output.*

- **Bertrand Model**:
  Firms compete by **setting prices simultaneously, assuming the price set by their competitor is fixed**, *often resulting in prices being driven down to marginal cost, akin to perfect competition.*

- **Stackelberg Model**:
  One firm (the leader) sets its output first, and the other firm (the follower) then chooses its output based on the leader's decision, *giving the leader a strategic advantage and often resulting in higher profits for the leader.*

Product Differentiation: Can you provide some examples?

Product Differentiation

To keep making an economic profit, a firm in monopolistic competition must be in a state of continuous product development. New product development allows a firm to gain a competitive edge, if only temporarily before competitors imitate the innovation.

- **Location**

  - If firms (or shops) choose to locate away from each other, then the lack of localized competition enables firms to raise their price a little. We can also think of 'travel costs' as 'search costs' if consumers need to expend effort to locate or learn about a product.

- **Product features**

  - If similar products differ in their features, they become imperfect substitutes for each other. While many customers may be indifferent between two slightly differentiated products, there may be a very small subset who have specific preferences – this gives firms a degree of 'market power' over these customers.

Product Differentiation

In the economics literature, it is customary to distinguish between vertical and horizontal product differentiation (Beath and Katsoulacos, 1991).

- First, **vertical product differentiation** means one product or service differs in overall quality from another.

  - For example, one brand of fruit juice may have higher fruit content and lower sugar content than another brand, and as such is recognised as a higher-quality brand by all consumers.

- Second, **horizontal product differentiation** means products or services are of the same or similar overall quality, but offer different combinations of characteristics.

  - For example, Ford Focus, Vauxhall Astra, Honda Civic, Volkswagen Golf and Toyota Corolla are all similar brands or models of car, but each one offers a slightly different package of attributes.

Product Differentiation

- With **natural product differentiation**, the distinguishing characteristics arise from natural attributes or characteristics, rather than having been created through the deliberate actions of suppliers.

- With **strategic product differentiation**, the distinguishing characteristics are consciously created by suppliers; for example, through a decision to create a new brand and promote it by means of advertising or other types of marketing activity.

- Sometimes, however, the distinction between natural and strategic product differentiation is not clear-cut.

Natural product differentiation

- **Geographic variation.** In this case, the location of a seller automatically differentiates a product or service in the minds of consumers. Clearly the corner shop and the out-of-town superstore offer competing services that are differentiated in the minds of consumers on the basis of location.

- **New technology.** New technology can be used to differentiate a product; for example, through the addition of internet and email features to a mobile telephone.

- **Brands and trademarks**. Trademarks are words or symbols used to identify particular brands. In many cases, a firm that has developed a trademark will also hold exclusive property rights to use the trademark. Eg. Lacoste, Armani or Ralph Lauren clothing.

- **Community or national differences.** The country or community of origin might be the defining attribute that differentiates goods and services. In other words, products and services from certain parts of the world are deemed to be different and of higher quality. Examples include Russian vodka, Scottish whisky, Swiss watches.

- **Consumer tastes and preferences.** Consumers themselves have different attributes, tastes and preferences. Consequently, the product characteristics that are most desired vary from one consumer to another. Examples include the colour of cars and the style of clothes.

Strategic product differentiation

- **Additional services.** Additional services can often be used to differentiate products. Even if the same product is available from two suppliers, the conditions surrounding the sale might be different. Suppliers might differentiate their products by offering cheaper credit, faster delivery times or a more comprehensive after-sales service.

- **Rate of change of product differentiation.** Products with a short natural lifespan can be subjected to planned obsolescence, especially in cases where the product accounts for a relatively small proportion of most consumers' budgets.

- **Factor variations.** Factor inputs such as labour and capital are rarely homogeneous. This creates opportunities for final outputs produced using differentiated factors of production to be marketed as distinct from those of other firms. For example, a supplier might claim its employees are more highly skilled, better trained or less prone to make errors.

- **Consumer ignorance.** Ignorance on the part of consumers can allow firms to exaggerate the extent of differentiation of their products and services. Suppliers sometimes exploit consumer ignorance through misleading advertising. Sometimes suppliers attempt to convince consumers that higher prices reflect higher quality.

Models of product differentiation

Models of product differentiation

In the economics literature, there are two basic approaches to the specification of consumer preferences and the modelling of firm behaviour in the case of horizontal product differentiation (Waterson, 1994).

- **Representative consumer models**
  - Consumers choose based on their preferences.
  - Firms compete by offering different products.
  - Demand depends on the firm's price and competitors' prices.

- **Spatial or location models**
  - Consumers prefer certain product characteristics.
  - Small price changes affect demand if products are similar.
  - But be independent of small changes in the price set by a third firm, whose product characteristics are further removed

  - Consider the high-street food chains McDonald's, Burger King and Pizza Hut.
  - Burger King's price cut affects McDonald's demand.
  - Pizza Hut's small price cut doesn't affect burger demand.
  - Large price cut by Pizza Hut might make burger consumers switch to pizza.

Models of product differentiation

- **Lancaster's product characteristics model**
  - Consumers derive utility not from the goods they consume but from the characteristics that are embodied in those goods. Goods are viewed as bundles of characteristics, and differentiated goods or brands are goods that contain the same characteristics in different proportions. For example, when you decide which car to buy, you consider an array of characteristics.

- **Hotelling's location model**
  - The products themselves are identical, but if all firms were charging the same price, all consumers would prefer to purchase from their nearest supplier. This means each firm has a certain amount of market power. A firm that raises its price does not automatically lose all its customers to its competitors.
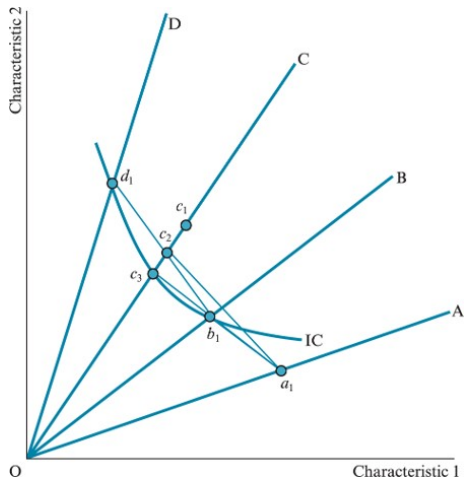
- **Salop's location model**
  - A modified version of the Hotelling model, in which the firms and consumers are located around the circumference of a circle. Eg. A group of rival airlines offering flights on a particular route at different hours of the day and night, around a 24-hour clock. Each airline offers a flight at a particular time, and each passenger has a preferred departure time, which varies between passengers (and which might be anytime, day or night).

Lancaster's product characteristics model: Examples of products and their characteristics

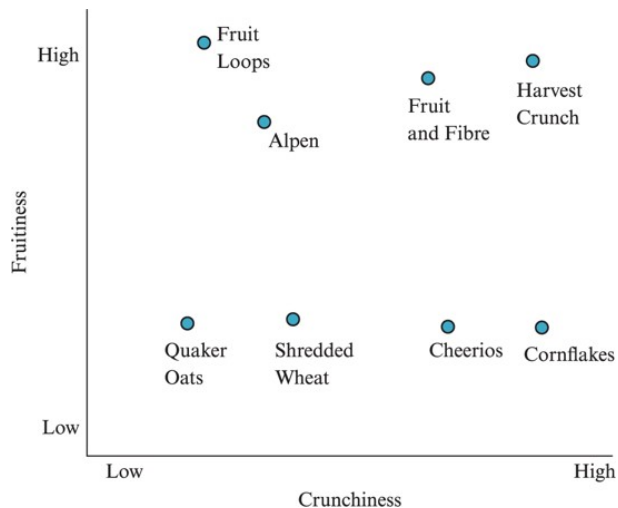| Product	Characteristic 1	Characteristic 2
Breakfast cereals	Crunchiness	Fruitiness
Curry sauces	Flavour	Hot, medium or mild
Musical acts	Beat	Melody
Cars	Spaciousness	Manoeuvrability

Lancaster's product characteristics model

A product with preferred characteristics (i.e., a product whose characteristics match the consumer's ideal point) is always more preferred.

Hotelling's location model

The product with features closer to your location is more preferred.

Salop's location model

In this model each firm's market segment becomes narrower, and the preferences of the consumers each firm retains become more closely aligned with the characteristics of that firm's product. Although consumers pay a higher price, they obtain a product with characteristics closer on average to their ideal product specification.
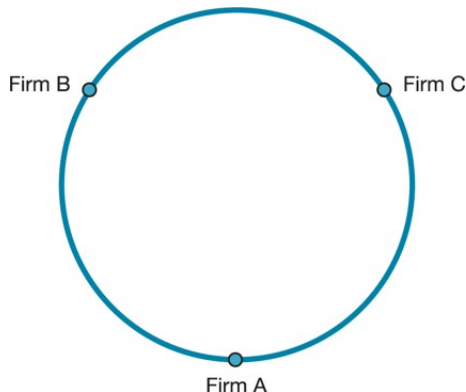
Advertising

- A firm with a differentiated product needs to ensure that customers know that its product differs from its competitors.

- Firms use advertising and packaging to achieve this goal.
- A large proportion of the price we pay for a good covers the cost of selling it.

- Advertising expenditures affect the firm's profit in two ways: They increase costs, and they change demand.

Advertising as a percentage of gross domestic product (at market prices)

| Country	1996	1998	2000	2002	2004	2006	2008
Austria	0.72	0.83	0.97	0.90	0.94	0.94	1.05
Belgium	0.65	0.74	0.81	0.83	0.85	0.85	0.79
Denmark	0.82	0.87	0.77	0.68	0.77	0.77	0.72
Finland	0.87	0.91	0.93	0.90	0.92	0.92	0.81
France	0.65	0.64	0.71	0.63	0.66	0.66	0.57
Germany	0.89	0.93	1.00	0.84	0.80	0.79	0.78
Greece	0.79	0.85	1.02	0.95	0.81	0.80	0.81
Ireland	0.96	0.95	1.13	0.96	0.88	0.86	0.85
Italy	0.49	0.55	0.69	0.60	0.69	0.70	0.58
Japan	0.76	0.75	0.79	0.73	0.81	0.81	0.85
Netherlands	0.90	0.95	0.97	0.84	0.76	0.74	0.75
Norway	0.81	0.85	0.73	0.73	0.67	0.70	0.58
Portugal	0.76	0.87	1.14	1.08	1.48	1.49	1.32
Spain	0.83	0.83	0.89	0.75	0.78	0.78	0.64
Sweden	0.75	0.85	0.83	0.67	0.78	0.84	0.79
Switzerland	0.93	0.94	1.07	0.97	0.85	0.83	0.76
UK	1.16	1.24	1.30	1.12	1.23	1.18	1.00
United States	1.28	1.30	1.39	1.21	1.40	1.35	1.09

Note: Data are net of discounts. They include agency commission and press classified advertising expenditure but exclude production costs.

Advertising-to-sales ratios of selected UK product groups, 2008

Product group	Advertising-to-sales ratio
Airlines	3.85
Babycare products	39.70
Bath and shower additives	1.55
Beer	0.05
Blu-ray disc	5.28
Carbonated soft drinks	8.48
Cars	0.03
Cereals	7.11
Cheese	14.95
Chocolate bars	2.43
Cinema	0.30
Coffee	3.11
Deodorants	8.64
DVD players	0.68
Hair colourants	16.48
Internet service providers	21.84
Magazines	6.66
Mobile telephones	9.18
Motor insurance	8.79
Rail travel	0.97
Shampoos	2.59
Sportswear	0.26
Tea	2.49
Televisions	0.58
Vitamins	9.62
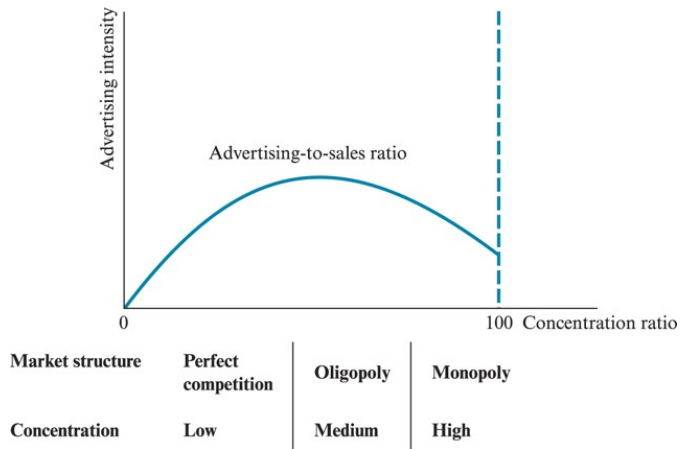
Source: Adapted from Advertising Association (2009) Advertising Statistics Yearbook 2009, Table 18.1, pp. 206–12, researched and compiled by WARC (http://www.warc.com).

Advertising response functions

- For the entrant, assumed to be advertising its product or brand for the first time, a threshold level of advertising expenditure of a 1 must be achieved before its advertising begins to have any positive effect on sales.

- Saturation point is reached at an advertising expenditure level of a 2. Any further advertising beyond a 2 has a harmful effect on sales: consumers become fed up with receiving the firm's advertising messages, and stop buying the product or brand.

- The incumbent benefits from name recognition so doesn't have the same problems.
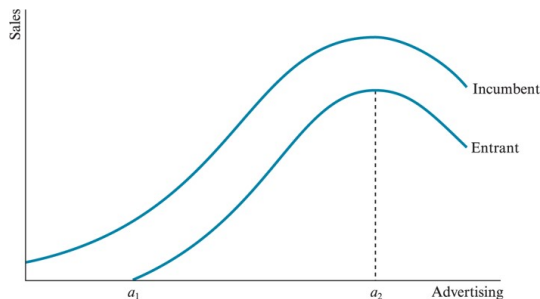
Measuring competition

Herfindahl-Hirschman Index (HHI)

- Measures market concentration by summing the squares of the market shares of all firms in the market.

-
$$\text{HHI} = \sum_{i=1}^{N} s_i^2$$

  where s_i is the market share of firm i and N is the number of firms.

- **Interpretation**:
  - HHI<1500: Competitive market.
  - 1500<HHI<2500: Moderately concentrated market.
  - HHI>2500: Highly concentrated market.

- Indicates the level of competition and potential for market power abuse.

Rosse-Panzar Revenue Test

- The Rosse-Panzar test is used to assess the level of competition in a market.
- It is based on the relationship between a firm's revenue and its input prices.
- The test involves estimating the following regression:

$$\log TR_{i,t} = \beta_0 + \beta_1 \log W_{1,i,t} + \beta_2 \log W_{2,i,t} + \beta_3 \log W_{3,i,t} \qquad (1)$$

where $TR_{i,t}$ is the revenue of firm i in year t, $W_{i,j,t}$ are the input prices, for example, labour, capital and land.

- The sum of the estimated coefficients $H = \beta_1 + \beta_2 + \beta_3$ is known as the H-statistic.

Interpreting the H-Statistic

- $H = 1$: Perfect competition.
- $H < 0$: Monopoly or collusive oligopoly.
- $0 < H < 1$: Monopolistic competition.

- Helps determine the nature of competition in an industry. Assesses the competitive behavior of firms based on revenue response to input price changes.

Bresnahan-Lau Markup Test

- The Bresnahan-Lau test measures the degree of market power by estimating the markup over marginal cost.

- It involves estimating the follwoing demand and supply equations to identify the market structure.:

$$Q = a - bP + u \tag{2}$$
$$MC = c + dQ + v \tag{3}$$

where Q is quantity, P is price, and u, $v =$ Error terms.

- The markup is given by:

$$\lambda = \frac{P - MC}{P} \tag{4}$$

Pricing in Practice

Pricing in Practice

Is there a unique equilibrium price?
- in most cases, no

Factors determining price

- **The degree of competition**: Firms operating under monopoly or collusive oligopoly are likely to charge very different prices from firms operating in highly competitive markets.

- **Information on costs and demand**: Firms in the real world may have very scant information about the elasticity of demand for their product and for the products of their competitors, and how demand is likely to change.

- **The aims of the firm**: Is the firm aiming to maximise profits, or is it seeking to maximise sales or growth, or does it have a series of aims?

- **The life cycle of a product**: When a firm launches a product, it may charge a very different price from when the product has become established in the market.

- **past practices**

Cost Plus Pricing

- According to the neoclassical theory of the firm, under the assumption of profit maximization price is determined through the application of the behavioural rule marginal revenue equals marginal cost (MR = MC).

- From an early stage in the development of the neoclassical theory, some economists questioned whether firms have sufficient information to apply this rule in practice.

- In a highly influential study, Hall and Hitch (1939) report the results of interviews with the managers of 38 businesses, 30 of whom reported the use of some form of cost plus pricing formula.

Cost Plus Pricing Formula

Under cost plus pricing, the firm calculates or estimates its AVC (average variable cost), and then sets its price by adding a percentage markup that includes a contribution towards the firm's fixed costs, and a profit margin:

$$\text{Price} = \text{AVC} + \%\text{markup}$$

or

$$P = (1 + m)\text{AVC}$$

where P denotes price, and the markup (expressed as a percentage) is $100 \times m$ percent.

Advantages of Cost Plus Pricing

- The cost plus pricing formula is simple to understand, and can be implemented using less information than is required for profit-maximizing pricing.

- Cost plus pricing may produce greater price stability than profit-maximizing pricing.

- Cost plus pricing appeals to a sense of fairness: in determining its markup, the firm can claim to allow for a reasonable profit margin, rather than the maximum profit.

Figure 1. How are prices determined? 2012 Bank of England Survey of 693 companies

	Not important	Slightly important	Important	Very important
Price is primarily determined by your competitors' price	4.9	16.3	35.6	32.6
Price is based on direct cost per unit plus a percentage mark-up that varies	8.9	14.9	25.2	32.9
Price is based on direct cost per unit plus a fixed percentage mark-up	15.9	19.3	19.0	24.7
Price is primarily specified by your principal customer	22.5	20.5	17.7	9.5
Price is primarily determined in other ways	15.6	3.0	4.3	12.8

Source: Jennifer Greenslade and Miles Parker 'New insights into price-setting behaviour in the UK: Introduction and survey results' The Economic Journal, February 2012, Vol. 122, Issue 558

Figure 2. How UK firms set their prices

Pricing method	All	Manufacturing	Construction	Retail	Other services
Reference to market conditions	39	41	51	18	48
Competitor prices	25	26	11	30	23
Direct cost + variable markup	20	20	22	21	17
Direct cost + fixed markup	17	16	19	24	14
Customer set	5	6	3	0	6
Regulatory agency	2	1	0	0	3

Note: Data are percentages of sample firms reporting use of the method shown in the left-hand column. Percentages may exceed 100 per cent because firms are permitted to indicate more than one choice.

Figure 2. How firms set prices in various European countries

	Bel	Ger	Sp	Fr	It	Nl	Pt	Eurozone
Mark up	46	73	52	40	42	56	65	54
Competitors' price	36	17	27	38	32	22	13	27
Other (mainly customer and regulator set)	18	10	21	22	26	21	23	18

Source: Based on data in The Pricing Behaviour of Firms in the Euro Area: New Survey Evidence (Eurosystem Inflation Persistence Network, Working Paper series, No. 535, European Central Bank, October 2005).

Figure 2. Price-setting strategies of firms in the euro area

| Country [1]	Cost plus pricing	Rivals' prices	Other
Belgium:			
All firms	45.9	36.4	17.7
Low competition	–	–	–
High competition	–	–	–
France:			
All firms	40.0	38.0	22.0
Low competition	49.8	24.4	25.9
High competition	36.0	47.6	16.4
Germany:			
All firms	73.0	17.0	10.0
Low competition	78.9	9.4	11.7
High competition	69.8	22.5	7.6
Italy:			
All firms	42.4	31.7	25.9
Low competition	57.6	14.5	27.9
High competition	33.6	42.6	23.7
Netherlands:			
All firms	56.4	22.3	21.3
Low competition	56.6	15.3	28.2
High competition	56.5	25.4	18.1
Portugal:			
All firms	64.5	12.6	22.9
Low competition	78.7	2.9	18.4
High competition	59.9	17.6	22.4
Spain:			
All firms	51.9	26.6	21.5
Low competition	61.3	11.8	27.0
High competition	44.1	40.5	15.3
Euro area			
All firms	54.3	27.1	18.7
Low competition	63.6	14.7	21.7
High competition	49.8	35.1	15.1

Price Discrimination

Price Discrimination

- **Meaning of price discrimination**

- **Types of price discrimination**

  - first degree
    - charging consumers the maximum each is prepared to pay Whats the difficulty here?

  - third degree
    - characteristics, traits or attributes used to 'group' different consumers

  - second degree
    - offering a range of different pricing options for the consumer to choose from

Price Discrimination

- **First-degree price discrimination**

  - **perfect price discrimination**
    - difficult to establish the maximum people are willing to pay
    - asymmetric information

  - **personalised or person-specific pricing**
    - approaches pure first-degree price discrimination
    - more likely when there is scope for bargaining and the seller is a skilful haggler
    - **the impact of digital markets**
    - capturing consumers' characteristics
    - tracking browsing behaviour
    - evidence of personalised pricing
    - constraints on the use of personalised pricing

  - **a model of first-degree price discrimination**
    - revenue equals area under the demand curve
    - captures all the consumer surplus

First-degree price discrimination
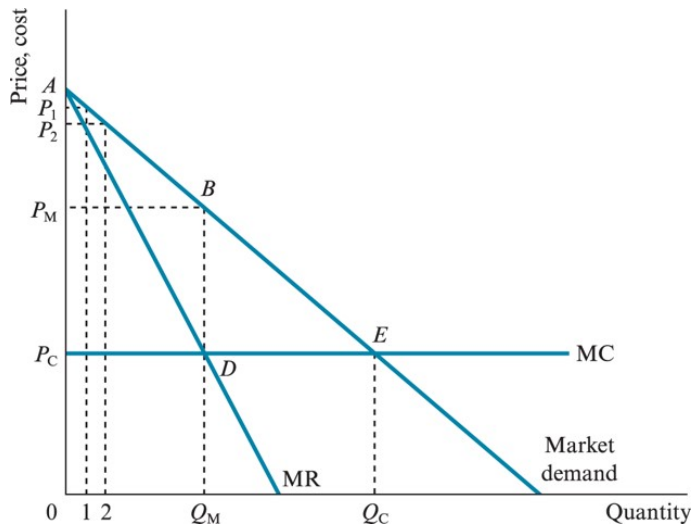
First-degree price discrimination
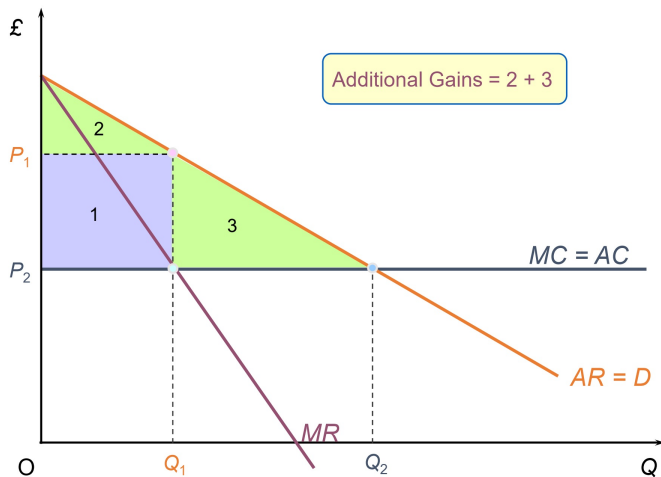
- **Third-degree price discrimination**

  - **firms discriminate according to some consumer characteristic**
    - e.g. age or location

  - **the characteristic must be:**
    - relatively easy for the firm to observe
    - provide some information about the consumer's willingness to pay
    - are not illegal to use (e.g. discrimination by ethnicity or gender)
    - acceptable to the consumer

  - **should be impossible or costly for consumers to change characteristic**
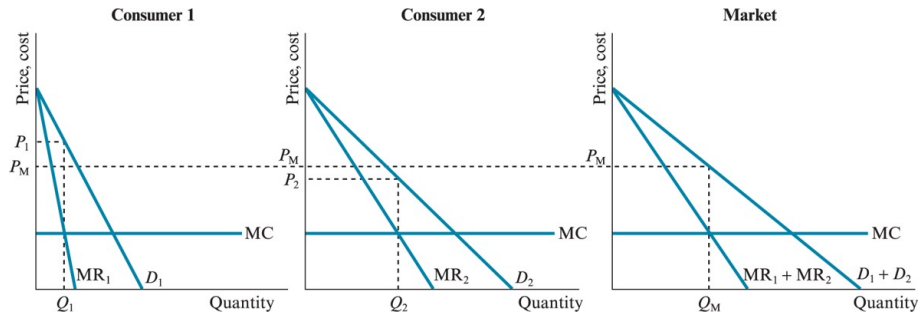
Examples of third-degree price discrimination

Characteristic	Example
Age	16–25 or senior rail card; half price children's tickets in the cinema.
Gender	'Ladies' night' in a bar or club where men pay the full price for drinks while women can get the same drinks at a discounted price.
Location	Pharmaceutical companies often charge different prices for the same medicine/drug in different countries. Consumers in the USA are often charged more than those from other countries.
Occupation	Apple, Microsoft and Orange provide price discounts to employees of educational institutions.
Business or individual	Publishers of academic journals charge much lower subscription rates to individuals than university libraries.
Past buying behaviour	Firms often charge new customers a lower price than existing customers for the same product or service as an 'introductory offer'.

- **A model of third-degree price discrimination**

  - **profit maximisation for a single-price firm**
    - horizontal summation of the demand curves
    - discontinuity in the MR curve

  - **profit maximising under third-degree price discrimination**
    - split customers into market H and market L
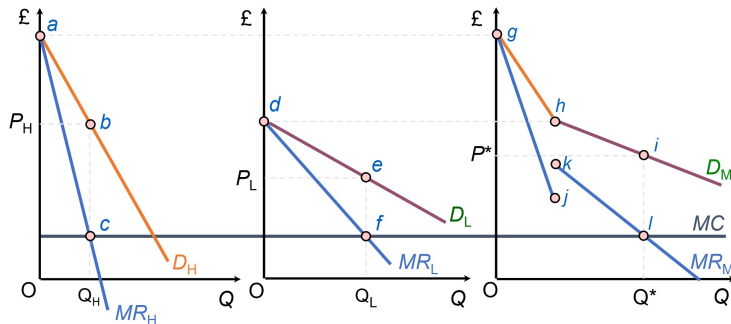   - equate MC with MR in each separate market

Examples of third-degree price discrimination

The third one is the case with no price discrimination.

Examples of third-degree price discrimination

The third one shows how with price discrimination the total of the market would look like.

(a) Market H

(b) Market L

(c) Total market (markets H + L)

# Which one of the following conditions is NOT necessary for (third-degree) price discrimination to take place?

1. The firm must be a monopoly.

2. Price elasticity of demand must differ in each market.

3. The firm must not be a price taker.

4. The markets must be separate.

5. People buying in the low-price market must not be able to sell to those buying in the high-price market.

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- **Second-degree price discrimination**

    - **discounts for greater purchases**

        - eg. quantity discounts
        - eg. block declining tariff (e.g. electricity companies)

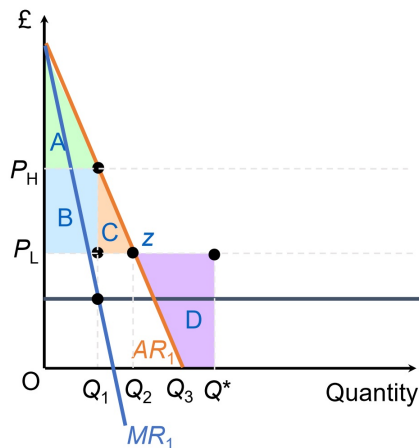# Second-degree price discrimination: a quantity discount
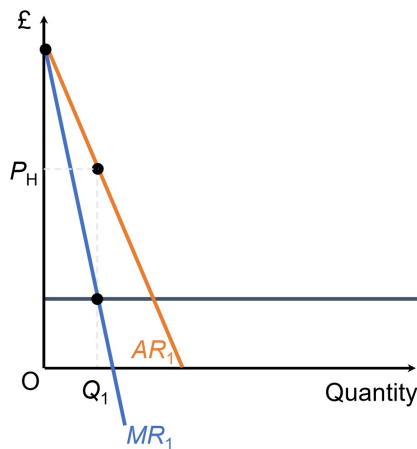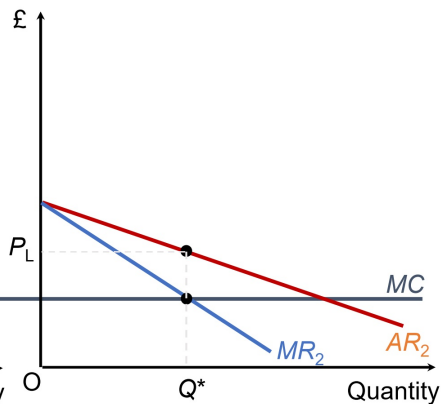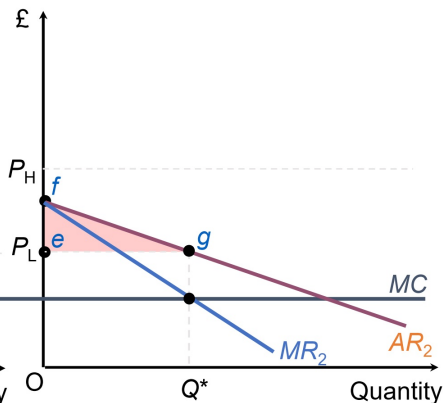

(a) Type 'I' consumer   **(b)** Type 'E' consumer

Second-degree price discrimination: a quantity discount
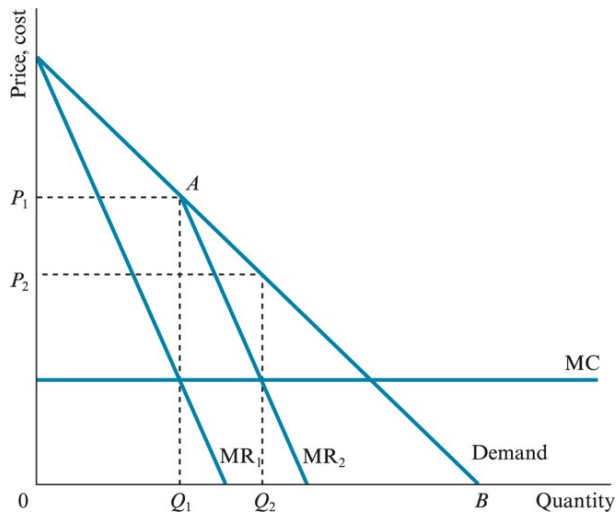

(a) Type 'I' consumer

(b) Type 'E' consumer

- **Second-degree price discrimination**

    - **discounts for greater purchases**
        - quantity discounts
        - block declining tariff (e.g. electricity companies)

    - **coupons/vouchers**
        - time and effort

    - **intertemporal pricing**
        - airline tickets

Intertemporal price discrimination (based on willingness to pay at a time period)

- **Second-degree price discrimination and product differentiation**

    - **Versioning – different versions of core product**
        - First class vs. economy seats
        - Different specifications of computers/software

    - **Combinations of versioning and inter-temporal pricing**
        - Hardback and paperback books

Price Discrimination

- **Other discriminatory pricing practices**

    - **Peak-load pricing**
        - eg. Higher bus and train fares during 'rush hours'
    - **Two-part tariff**

        - Fixed fee plus price per unit
        - eg. Mobile phones/energy

- **Conditions for price discrimination**

- **Firm must have some market power**
  - Faces a downward sloping demand curve
- **Re-sale of the product between customers must be difficult/impossible**
  - I.e. consumed at time of purchase/perishable/high transaction costs
- **Demand elasticity must vary between customers at any given price**

Price Discrimination

- **If a supermarket has a 'buy 2 get a 3rd one free' offer, this is an example of:**

Ⓐ First-degree price discrimination.

Ⓑ Second-degree price discrimination.

Ⓒ Third-degree price discrimination.

Ⓓ Demand pricing.

Ⓔ Mark-up pricing.

- **Answer:**

A. First-degree price discrimination.

B. Second-degree price discrimination.

C. Third-degree price discrimination.

D. Demand pricing.

E. Mark-up pricing.

Price Discrimination

- **Some firms provide coupons and vouchers on their websites. Any customer can print off these vouchers and use them to obtain their next purchase from the firm at a discounted price. This is most likely to be an example of:**

Ⓐ First-degree price discrimination.

Ⓑ Second-degree price discrimination.

Ⓒ Third-degree price discrimination.

Ⓓ Uniform pricing.

Ⓔ It is impossible to say without more information.

Price Discrimination

- **Answer:**

Ⓐ First-degree price discrimination.

Ⓑ Second-degree price discrimination.

Ⓒ Third-degree price discrimination.

Ⓓ Uniform pricing.

Ⓔ It is impossible to say without more information.

Price Discrimination

- **Advantages to the firm**

- Earn higher revenues from
    - A given level of sales
    - Extra sales

- **Price discrimination and the public interest**

- Distribution

- Impact of extra sales

- Misallocation effects

- Competition effects
   - Consumer poaching effect

Transfer Pricing

Transfer Pricing

- Transfer pricing refers to the pricing of goods, services, and intangibles between related entities within an MNE, such as transactions between divisions, subsidiaries, or associated companies that are part of the same MNE.

- The organisation of a business as a series of divisions, **each pursuing an independent strategy, has implications for pricing policy.**

- In an attempt to reduce the diseconomies that stem from coordinating such large business enterprises, the setting of price and output levels is frequently decentralised to individual divisions.

- However, the decentralisation of pricing and output decision-making can become problematic.

- There then arises the difficulty of how such intermediate products should be priced. This is known as **the problem of transfer pricing.**

- One implication of this is that a division which that is seeking to maximise its own profits when selling to another division will attempt to exploit its 'monopoly' position and increase the transfer price. **So costs might increase and profit fall.**

Transfer Pricing

- **Solution: Use of marginal-cost pricing to overcome problems of internal monopoly power. But this comes with issues.**

- Transfer pricing within multinational companies is an area of **concern for tax authorities**. The price used to transfer goods or services between plants and divisions located in different countries is not determined by a market. Instead, t**he price is often set to avoid tax, ensuring that profits appear in countries where taxes on profits are lowest.**

- There have been many cases of companies setting transfer prices so as to avoid tax. Companies such as Starbucks, Apple, Amazon and Coca-Cola have charged themselves high prices for the use of things such as logos, brands or business services owned or 'provided by' a subsidiary located in a low-tax country or region, such as Luxembourg or the Cayman Islands and have thereby diverted a large proportion of their profits to these 'tax havens'.

- OECD countries have agreed that tax liabilities on profits **should be calculated using prices that would have arisen if the transfers had taken place between independent firms, rather than within one firm**.

- In practice, this is **difficult to achieve** and extremely hard to police and often, the 'subsidiary' is little more than a small office with one employee.

Pricing and the Product Life Cycle

Pricing and the Product Life Cycle

- **The nature of product life cycles**

- **the four stages**
    - launch
    - growth
    - maturity
    - decline
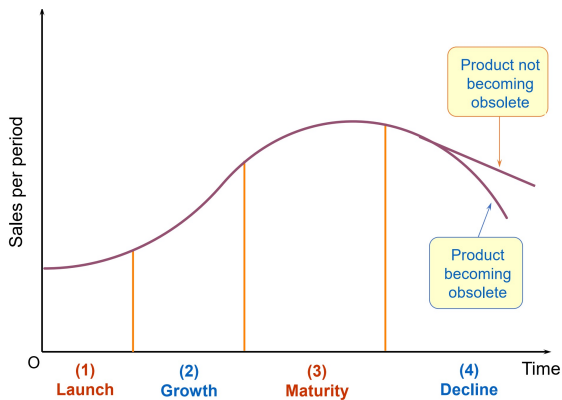
In which stage is it likely that price competition is intense and firms invest in product innovation to stimulate growth in sales?

1. Launch

2. Growth

3. Maturity

4. Decline

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1. Launch

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The launch stage

- **Given the lack of substitutes, the firm may be able to charge very high prices and make large profits.** This will be especially true if it is a radically new product – like the ballpoint pen, the home computer and the mobile phone were. Such products are likely to have a rapidly expanding and price-inelastic demand.

- T**he danger of a high-price policy is that the resulting high profits may tempt competitors to break into the industry, even if barriers are quite high.** As an alternative, then, the firm may go for maximum 'market penetration': keeping the price low to get as many sales and as much brand loyalty as possible, before rivals can become established.

- Which policy the firm adopts will **depend on its assessment of its current price elasticity** of demand and the likelihood of an **early entry by rivals**.

The growth stage

- Unless entry barriers are very high, the rapid growth in sales will attract new firms.

- The industry becomes oligopolistic.

- Despite the growth in the number of firms, **sales are expanding so rapidly that all firms can increase their sales. Some price competition may emerge, but it is unlikely to be intense at this stage.**

- **New entrants may choose to compete in terms of minor product differences,** while following the price lead set by the original firm.

The maturity stage

- Now that the **market has grown large, there are many firms competing.** New firms – or, more likely, firms diversifying into this market – will be entering to get 'a piece of the action'. At the same time, the growth in sales is slowing down.

- Competition is now likely to be more intense and collusion may well begin to break down. **Pricing policy may become more aggressive as businesses attempt to hold on to their market share.** Price wars may break out, only to be followed later by a 'truce' and a degree of price collusion.

- It is in this stage particularly that **firms may invest considerably in product innovation in order to 'breathe new life' into old products**, especially if there is competition from new types of product.

The decline stage

- Eventually, as the market becomes saturated, or as new superior alternative products are launched, sales will start to fall.

- For example, once most households had a fridge, the demand for fridges fell back as people simply bought them to replace worn-out ones, or to obtain a more up-to-date one. **Initially, in this stage, competition is likely to be intense.**

- **All sorts of price offers, extended guarantees, better after-sales service, added features, etc., will be introduced as firms seek to maintain their sales.** Some firms may be driven out of the market, unable to survive the competition.

- After a time, however, the level of sales may stop falling. **Provided the product has not become obsolete, people still need replacements.**