Edexcel

A Level

Economics

(Code: WEC11 01)

Unit 03-Section 3

Market structures and contestability

Chapter 08 – Efficiency

EFFICIENCY

The market mechanism allocates resources, but how well does it do this? One way of judging this is to consider how efficiently it resolves the three fundamental questions in economics of how, what and for whom production should take place. Efficiency is concerned with how well resources, such as time, talents or materials, are used to produce an end result. In economic terms, it is concerned with the relationship between scarce inputs and outputs. There are a number of different forms of efficiency which need to be considered.

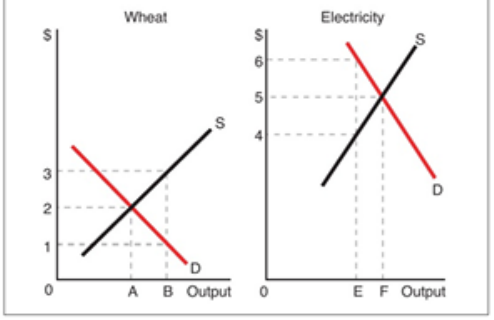
ALLOCATIVE EFFICIENCY

Allocative efficiency measures whether resources are allocated to those goods and services demanded by consumers.

FIGURE 1

Allocative efficiency

Transferring resources from the wheat market where price is below marginal cost to the electricity market where price is above marginal cost will lead to allocative efficiency.



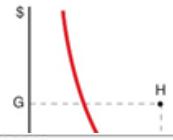
PRODUCTIVE EFFICIENCY

Productive efficiency is achieved when production is achieved at the lowest average cost, while productive inefficiency occurs when production costs exceed the minimum possible. An average cost curve diagram illustrates this. A firm is productively efficient if it produces output at an average cost of OE, while inefficient if it produces output at an average cost of OF or output OC at an average cost of OF. Additionally, a firm is productively inefficient if it produces within its average cost curve boundary.

FIGURE 2

Productive efficiency

For a firm, productive efficiency only occurs when production takes place at lowest average cost. In this case it is at an average cost of OE and an output level of OA.



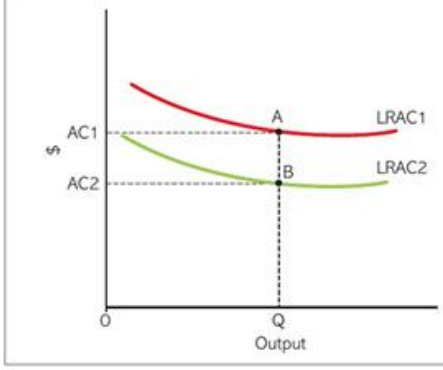
DYNAMIC EFFICIENCY

There is dynamic efficiency in an economy when resources are allocated efficiently over time. Productive and allocative efficiency, in contrast, are examples of static efficiency. This is efficiency at a point in time.

One example of dynamic efficiency concerns the rate of investment. Firms invest either to cut costs or to make new products. Investment can be in research and development, in machinery or buildings, or in training workers.

FIGURE 3

Dynamic efficiency



X-INEFFICIENCY

X-inefficiency, also known as organisational slack, is a type of productive inefficiency where a firm is not producing at the lowest possible cost for a given output level. It occurs when a firm operates within its average cost curve, not on the boundary. X-inefficiencies can occur due to poor cost control, excessive workforce, or inefficient capital equipment. Additionally, stakeholders within the firm can extract benefits beyond the firm's budget, such as directors and managers taking bonuses, trade unions negotiating higher pay rates, or environmental groups imposing stricter environmental standards.

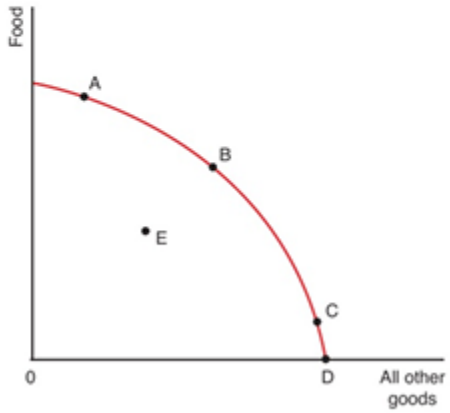
EFFICIENCY AND THE PRODUCTION POSSIBILITY FRONTIER

Efficiency can be illustrated using a production possibility frontier (PPF), which shows combinations of goods that could be produced if resources were fully used. Points A, B, C, and D are productively efficient, as they represent the maximum combination of goods. If there are inefficiencies, production would occur within the PPF. Allocative efficiency requires production to occur on the boundary, where consumers' preferences are maximized. For example, point D is allocatively efficient, but producing no food would result in inefficiency.

FIGURE 4

Productive and allocative efficiency

Productive and allocative efficiency occur when the economy operates on its boundary, for example at A or B. However, there is only one point on the boundary which is allocatively efficient, showing the preferences of consumers for a given combination of goods.



EFFICIENCY AND INEFFICIENCY IN DIFFERENT MARKET STRUCTURES

Firms in competitive markets tend to be more efficient than those markets where a few firms dominate. The following chapters (Chapters 10 to 13) will cover whether firms in each of the **market structures** are productively efficient in the short run and in the long run and also whether they are allocatively efficient in the short run and long run.

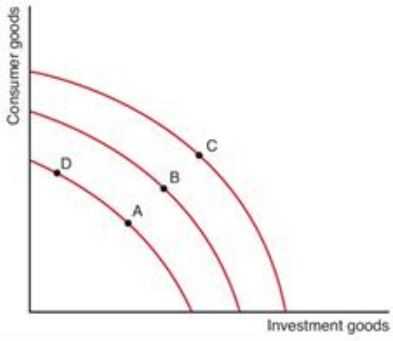
In economics, competition is generally seen as more desirable than monopoly. Firms can compete among themselves in a variety of different ways. They can compete:

- on price, offering the lowest price to customers
- on the formulation or design of a product, offering non-homogeneous products which differ from their rivals
- on quality, reliability and customer service, offering products and services which are better made, last longer or are easier to buy
- on availability of a product, at a point in time and in a particular geographical area
- through promotion such as advertising.

FIGURE 5

Dynamic efficiency

Dynamic efficiency occurs when consumer preferences for present versus future consumption are met. There is dynamic efficiency when the boundary is moving outwards in accordance with those preferences.



SUBJECT VOCABULARY

allocative efficiency occurs when scarce resources are used to produce a bundle of goods which satisfies consumer preferences and maximises their welfare

dynamic efficiency occurs when resources are allocated efficiently over time

productive efficiency achieved when production is achieved at the lowest average cost

market structures the characteristics of a market which determine the behaviour of firms within the market

supply chain the number of businesses which are involved, at different stages, in the production and distribution of a single good

X-inefficiency inefficiency arising because a firm or other productive organisation fails to minimise its average costs of production at a given level of output

Chapter 9 Market structure and concentration ratios

MARKET STRUCTURES

Market structures are the characteristics of a market which determine a firm's behaviour. Economists emphasise a small number of main characteristics:

- the number of firms in the market and their relative size
- the number of firms that might enter the market and the ease or difficulty with which these new entrants might enter or exit
- the extent to which goods in the market are similar the extent to which all firms in the market share the same knowledge
- the extent to which the actions of one firm will affect another firm.

The number of firms in the market and their relative size. The number of firms in an industry may vary from one to many.

- A pure monopoly is said to exist where there is only one supplier in the market.
- In a market dominated by a few large producers, the market structure is an oligopoly. In an oligopolistic market there may be a large number of firms, but the main characteristic is that most are small and relatively unimportant, while a few large firms produce most of the output of the industry.

In perfect competition or in monopolistic competition there are a large number of small suppliers, none of which is large enough to dominate the market. The degree to which large firms dominate an industry is known as **market concentration**. This can be measured using a **concentration ratio,** which considers the **market share** of the leading firms in an industry. Concentration ratios are considered later in this chapter.

The number of firms that might enter the market and the ease or difficulty with which these new entrants might enter or exit. Market structures are not only affected by the number of firms in an industry and their relative output, but also by the potential number of new entrants to the market.

Difficulties in entering a market are called **barriers to entry**. In some industries, there are also difficulties in leaving the market and so these may become a barrier for a firm to enter the market in the first place. These are called **barriers to exit**.

The extent to which goods in the market are similar. Coal, steel and rice are examples. This does not mean that there are not different grades of coal or types of steel, but no producer has a monopoly on the production of any particular grade or type. Goods that are identical are called **homogeneous goods.**

Firms find it much easier to control their markets if they can produce goods that are **non-homogeneous.** Differentiating their product from those of their competitors (called **product differentiation)** and creating brands allows them to build up brand loyalty. This in turn leads to a reduction in the elasticity of demand for their product.

A brand or branded good may be physically no different from its competitors, or it may be slightly different, but branding has value for the firm because consumers think that the product is very different, so rival products are a very poor substitute for it.

The extent to which all firms in the market share the same knowledge. Buyers and sellers are said to have perfect knowledge of prices, output and products. Therefore, if one firm were to put up its prices, it would lose all its customers because they would buy from elsewhere in the industry. Hence, there can only be one price in the market.

The extent to which the actions of one firm will affect another firm. There are two possible relationships between firms in an industry. Firms may be **independent** of each other. This means that the actions of any one firm will have no significant impact on any other single firm in the industry. In agriculture, for instance, the decision of one farmer to grow more sugar this season will have no direct impact on any other farmer.

If firms are **interdependent**, then the actions of one firm will have an impact on other firms. An advertising campaign for one brand of soap bar, for instance, is designed mainly to attract customers away from other brands. Firms are more likely to be interdependent if there are few firms in the industry. Interdependence implies **uncertainty**.

COMPETITION AND MARKET STRUCTURE

The neo-classical theory of the firm recognises a number of market structures derived from the characteristics above. In following chapters these market structures will be considered in greater detail. Here is a summary of the characteristics of the main market structures:

• Perfect competition exists where a large number of firms, each producing a homogeneous good, compete in the industry. None of the firms is large enough to have a direct impact on any other firm or on the market price of the good. There is freedom of exit and entry to the industry.

• Monopolistic competition exists where there are a large number of firms, each producing a differentiated product. The firms have some control over the price they charge for their own product. There is freedom of exit and entry to the industry.

• Oligopoly exists where there may be many firms in the industry but a few large firms dominate and produce the majority of the output. Firms are interdependent and they make decisions taking into account what they think the behaviour of competitors will be.

• Monopoly exists where there is only one firm in the industry. High barriers to entry make it impossible for new firms to enter.

MARKET CONCENTRATION

The number of firms in an industry or market depends on its definition. For example, the economy can be divided into broad market classifications like primary goods, secondary goods, and tertiary goods, with a large number of firms operating in each

CONCENTRATION RATIOS

Having classified firms into industries or markets, it is possible to see how many producers there are in the industry or market. The number of producers is likely to be less important in studying the behaviour of firms in an industry than the power of individual firms within the market.

N-firm concentration ratio measures the proportion of the total sales produced by the N largest firms in the industry. (Note: N is the number of firms in the concentration ratio being calculated, e.g. for a 3-firm ratio, N = 3.) It has the formula:

$$\frac{\text{Total sales of N firms in the industry}}{\text{Total sales of all the firms in the industry}} \times 100\%$$

SUBJECT VOCABULARY

barriers to entry factors which make it difficult or impossible for firms to enter an industry and compete with existing producers

barriers to exit factors which make it difficult for firms to cease production and leave an industry

brand a name, design, symbol or other feature that distinguishes a product from other similar products and which makes it non-homogeneous

concentration ratio the market share of the largest firms in an industry. For instance, a 5-firm concentration ratio of 60 per cent shows that the five largest firms in the industry have a combined market share of 60 per cent

homogeneous goods goods made by different firms but which are identical

independent in market theory, when the actions of one firm will have no significant impact on any other single firm in the market

interdependent in market theory, when the actions of one firm will have an impact on other firms in the market

market concentration the degree to which the output of an industry is dominated by its largest producers

market share the proportion of sales in a market taken by a firm or a group of firms

market structures the characteristics of a market which determine the behaviour of firms within the market

non-homogeneous goods goods made by different firms which are similar but not identical, such as branded goods

perfect knowledge exists if all buyers in a market are fully informed of prices and quantities for sale, while producers have equal access to information about production techniques

product differentiation aspects of a good or service which serve to distinguish one product from another such as product formulation, packaging, marketing or availability

uncertainty in market theory, when one firm does not know how other firms in the market will react if it changes its strategy, such as changing its price

Chapter 10 - Perfect competition

ASSUMPTIONS OF PERFECT COMPETITION

The model of **perfect competition** describes a market where there is a high degree of competition. However, the word 'perfect' does not mean that this form of competition produces ideal results or maximises **economic welfare,** it simply means it has all the characteristics for the market to operate perfectly competitively.

A perfectly competitive market must possess four main characteristics:

• There must be many buyers and sellers in the market, none of whom is large enough to influence price. Buyers and sellers are said to be price takers. This type of market has many relatively small firms that supply goods to a large number of small buyers.

• There is freedom of entry to and exit from the industry. Firms must be able to establish themselves in the industry easily and quickly. Barriers to entry must therefore be low. If a firm wishes to cease production and leave the market, it must be free to do so.

• Buyers and sellers possess perfect knowledge of prices. If one firm charges a higher price than the market price, the demand for its product will be zero as buyers will buy elsewhere in the market. Hence the firm has to accept the market price if it wishes to sell into the market (i.e. it must be a price taker).

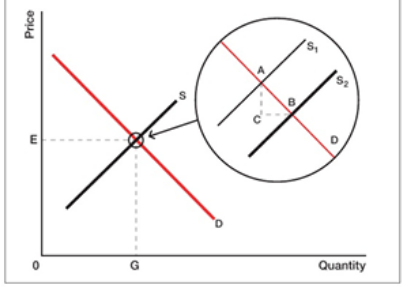
• All firms produce a homogeneous product. There is no branding of products and products are identical

• It is also assumed that firms are profit maximisers. Th Agriculture is a perfectly competitive industry with numerous farmers, no one influencing price. It's easy to buy or sell a farm, and farmers have perfect knowledge of market prices. They produce homogeneous products, making it easy to sell or leave the industry.

FIGURE 2

The effect of an increase in supply by one firm in a perfectly competitive industry

An increase in supply by one firm from S_1 to S_2 will have such a small effect on total supply that equilibrium price will remain at OE.



DEMAND AND REVENUE

In the perfect competition model, a large number of sellers exist. If one firm doubles output, industry supply increases, pushing the supply curve to the right. However, this increase is small due to the firm's small size, making the movement

along the demand curve impossible to distinguish and the price unchanged. This shift in supply is impossible to show through two supply curves.

The perfectly elastic demand curve facing a perfectly competitive firm also means that it is a price taker. It has no choice about what price it receives for its product. Either it accepts the market price or it can choose not to sell. At a cattle auction, for example, farmers can choose either to sell at the auction price or to take their cattle home.

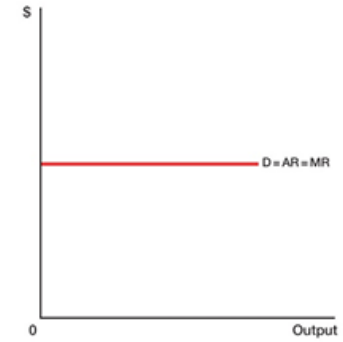
The demand curve facing a perfectly competitive firm is also the firm's average and marginal revenue curve. If a firm sells all its output at one price, this price must be the average price or average revenue received. If a firm sells an extra or marginal unit, it

will receive the same price as for previous units and therefore the marginal revenue will be the same as the average revenue.

FIGURE 3

The demand curve facing a firm in perfect competition

A change in output by the firm will have no effect on the market price of the product. Therefore the firm faces a perfectly elastic demand curve. This is also the firm's average and marginal revenue curve.



COST AND SUPPLY CURVES

In a competitive market, a firm's supply curve is its marginal cost curve. The marginal cost of production is the lowest price a firm would be prepared to supply an extra unit of output. In the short run, a firm will not necessarily shut down production if it makes a loss. Any revenue over and above a firm's variable cost contributes towards paying its fixed costs. It will only close down if average revenue or price is below average variable cost.

The firm's short-run supply curve will therefore be that part of the marginal cost curve above its average variable cost curve – the 'solid' portion of the marginal cost curve in Figure 4(a).

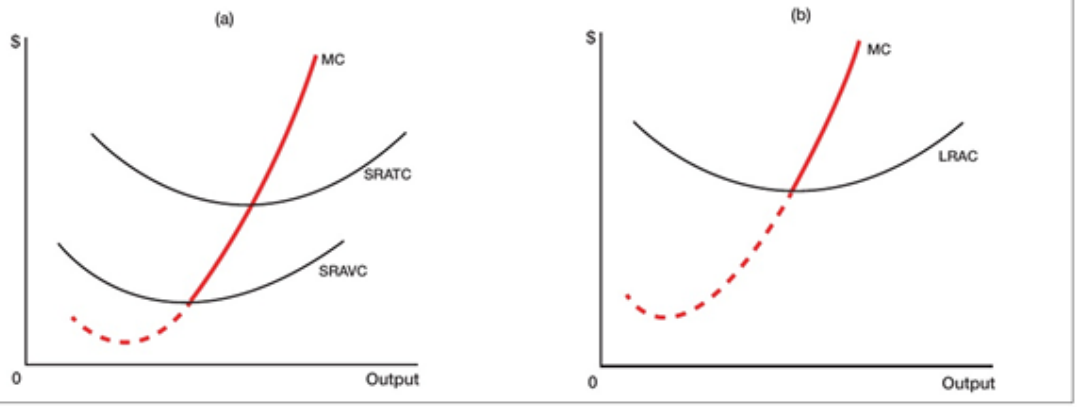
In the long run there are no fixed costs and the average total cost and average variable cost curves are the same. The firm will not produce unless it can cover all its costs. Therefore in the long run, the firm's supply curve is the marginal cost curve above its average cost curve, as shown in Figure 4(b).

The supply curve for the industry can be constructed by horizontally adding together the individual supply curves of each firm.

FIGURE 4

The firm's supply curve

The marginal cost of production is the lowest price at which a profit maximising firm will sell a marginal unit of production. Therefore the marginal cost curve is the supply curve for the firm. However, in the short run the firm may stay in production so long as it can cover its average variable costs. Hence the short run supply curve is the marginal cost curve above average variable cost, as in Figure 4(a). In the long run a firm will leave the industry if it makes a loss. Hence, the supply curve in the long run is the marginal cost curve above the average cost curve, as in Figure 4(b).



PROFIT MAXIMISING EQUILIBRIUM IN THE SHORT RUN

In perfect competition it is assumed that firms are short-run profit maximisers. Therefore a firm will produce at that level of output where marginal cost equals marginal revenue (the MC = MR rule). The price it charges is fixed by the market because the individual firm is a price taker.

Figure 5 shows one possible short-run equilibrium situation. The demand curve is perfectly elastic at a price of OE. The marginal cost curve cuts the marginal revenue curve at H and hence the equilibrium, profit maximising level of output for the firm is OQ. At this level of output, average revenue (QH) is higher than average cost (QG) and so the firm will make a supernormal profit. This is given by the shaded area EFGH and is average profit (EF) multiplied by the quantity produced (FG).

FIGURE 5

Short-run profit maximisation
The firm produces at its profit maximising equilibrium level of output, OQ, where MC = MR. Because AR is greater than AC, it makes a supernormal profit of EFGH.

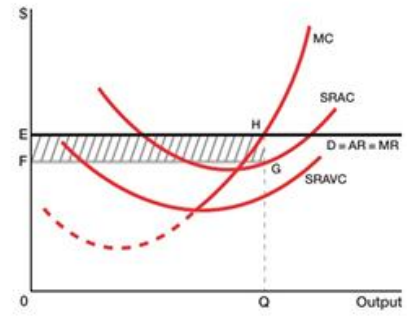
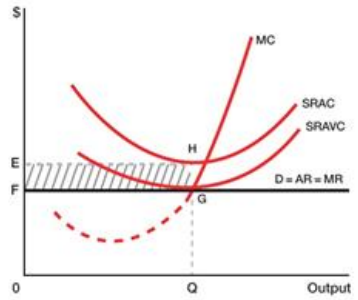


FIGURE 6

Short-run operation at a loss
The firm produces at its profit maximising equilibrium level of output, OQ, where MC = MR. In this case, because AR is less than AC, it will make a loss shown by the shaded area EFGH. This is the minimum loss it will make if AR is greater than AVC.



PROFIT MAXIMISING EQUILIBRIUM IN THE LONG RUN

In the long run, a perfectly competitive firm will not make losses or supernormal profits. If firms make losses, they will leave the industry, leading to a fall in supply and a rise in product prices. This process continues until the industry returns to profitability. If a firm makes supernormal profits, new entrants enter, increasing supply until the price is low enough for normal profit.

. This means that in equilibrium, average revenue equals average cost (AR = AC). It should also be remembered that MC = MR because the firm is profit maximising and that AR = MR because the demand curve is horizontal. Putting these three conditions together, it must be true that for a firm in long run equilibrium in a perfectly competitive market:

AC = AR = MR = MC

LONG-RUN COST CURVES

One interesting point to note is that the model of perfect competition predicts that all perfectly competitive firms will have identical costs in the long run. Assume a firm discovers some new technique of production which

FIGURE 7

Long-run equilibrium following short run losses
If losses are being made in the short run, firms will leave the industry, pushing the supply curve from S_1 to S_2. At S_2 there will no longer be any pressure for firms to leave because they will be able to make normal profits on their operations.

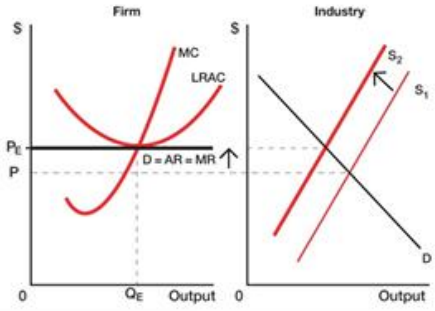
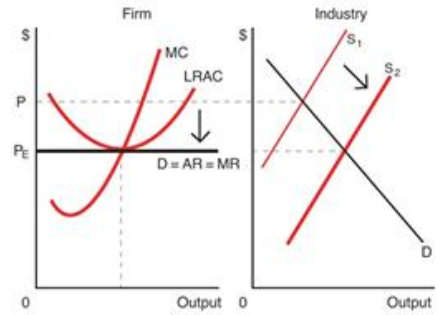


FIGURE 8

Long-run equilibrium following short run supernormal profit
If supernormal profits are being made in the short run, firms will enter the industry, pushing the supply curve from S_1 to S_2. At S_2 firms will no longer be attracted into the industry because they will only be able to make normal profits on their operations.



enables it to reduce costs and increase profits in the short run. Other firms will respond by copying this technique. They can do this because there is perfect knowledge in the industry and therefore there can be no industrial secrets.

PRODUCTIVE AND ALLOCATIVE EFFICIENCY

Chapter 8 discusses productive and allocative efficiency. Productive efficiency occurs when firms produce at minimum average cost outputs. In perfect competition, a firm is productively efficient in the long run, while allocative efficiency occurs when price equals marginal cost. In perfect competition, a firm is productive and allocatively efficient in the long run but only allocatively efficient in the short run.

SUBJECT VOCABULARY

economic welfare the level of well-being or prosperity or living standards of an individual or group of individuals, such as a country	price taker a firm which has no control over the market price and has to accept the market price if it wants to sell its product
perfect competition a market structure where there are many buyers and sellers, where there is freedom of entry and exit to the market, where there is perfect knowledge and where all firms produce a homogeneous product	spot market a market where commodities (oil, metals, farm products etc.) are bought for immediate delivery, rather than a futures market

Chapter 11 – Monopolistic competition

THE ASSUMPTIONS OF MONOPOLISTIC COMPETITION

The theory of monopolistic competition has almost the same characteristics as that of perfect competition, namely:

● there is a large number of buyers and sellers in the market, each of which is relatively small and acts independently

there are no barriers to entry or exit firms are profit maximisers.

However, one assumption is different:

● firms produce differentiated or non-homogeneous goods.

THE DOWNWARD SLOPING DEMAND CURVE

A firm with slightly different products has market power, as it can raise prices without losing customers to stable firms. However, due to the presence of similar products as close substitutes, its market power is weak. Small price changes result in large quantity demanded changes, making demand elastic. The firm's revenue and cost curves are downward sloping but elastic, with marginal revenue below average and U-shaped cost curves.

DIFFERENT TYPES OF PRODUCT DIFFERENTIATION

Product differentiation is a way in which firms make customers think that their products are different to competitors' products. These differences can be real or they can just be thought to be different by consumers. Firms can differentiate their products in a number of ways:

• **Physical differentiation** is where a firm makes its product slightly different to competitors' products, perhaps with a different design, colour, special features, performance or size.

• **Marketing differentiation** is where a firm uses different packaging and promotions to create a different brand image for their product compared Distribution differentiation is where the method of getting the product to the customer is different to competitors.

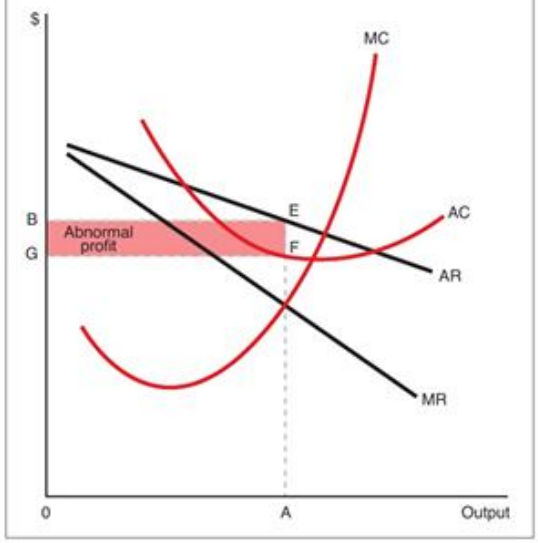
PROFIT MAXIMISING EQUILIBRIUM IN THE SHORT RUN

In the short run, firms in a monopolistically competitive industry can earn supernormal profit or they can make losses. Figure 1 shows a firm making supernormal profits. The firm will produce where MC = MR because it is a profit maximiser. This means that it will produce at an output level of OA. It will charge a price based on its demand or average revenue curve, in this case OB.

FIGURE 1

Short-run equilibrium for a monopolistically competitive firm earning supernormal profit

A firm will produce where MC = MR in equilibrium. Because average revenue is above average cost at the equilibrium level of output of OA, it will earn supernormal profit of BEFG.



PROFIT MAXIMISING EQUILIBRIUM IN THE LONG RUN

Long-run equilibrium is shown in Figure 3. The firm will produce where MC = MR, the profit maximising level of output. It will charge a price based on its demand or average revenue curve, in this case OB.

The firm in the long run will not be able to earn supernormal profit. This is because there is freedom of entry to the market.

Therefore, in monopolistic competition two conditions must hold in long-run equilibrium:

• MC = MR because the firm is a profit maximiser

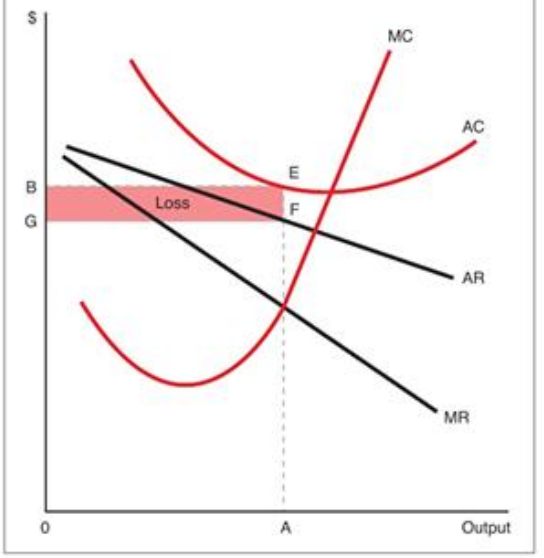
• AC = AR because competitive pressures that follow from the lack of barriers to entry and exit mean that a firm cannot either make a loss or earn supernormal profit.

This means that at the profit maximising output, the average cost curve is tangential to the average revenue curve as shown in Figure 3.

FIGURE 2

Short-run equilibrium for a monopolistically competitive firm making a loss

A firm will produce where MC = MR in equilibrium. Because average cost is above average revenue at the equilibrium level of output of OA, it will make a loss of BEFG.



PRODUCTIVE AND ALLOCATIVE EFFICIENCY

Chapter 8 discusses productive and allocative efficiency in a market. Productive efficiency occurs when firms produce at minimum average cost, while allocative efficiency exists when price equals marginal cost. **Monopolistic competition** prevents firms from producing at minimum average cost in the short and long run, as average revenue must equal average cost in equilibrium. Equilibrium output is at equilibrium price and MC = MR.

FIGURE 5

A monopolistically competitive market in the long run

A monopolistically competitive firm is neither productively nor allocatively efficient at its long-run equilibrium point.
At the profit maximising output of OA, the firm is neither productively efficient (output is not at lowest average cost) nor allocatively efficient (where P = MC).

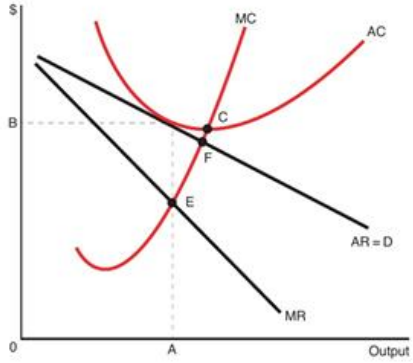
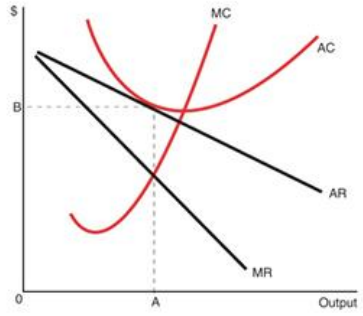


FIGURE 3

Long-run equilibrium for a monopolistically competitive firm

A firm will produce where MC = MR. As there are no barriers to entry, the firm will be unable to earn supernormal profits in the long run. Therefore it must also be true that AC = AR at the equilibrium level of output. This occurs when the AC curve is tangential to the AR curve.



TIPS ON DRAWING THE LONG RUN DIAGRAM FOR MONOPOLISTIC COMPETITION

- First draw and label the axes.
- Next draw the AC curve but do not make it too 'U' shaped as the AR curve will need to be drawn tangential to the downward sloping section of the AC curve.
- Add the AR curve tangential to the downward sloping section of the AC curve – making sure it is not too steep as the MR curve will then need to be added, cutting the x-axis half way between the origin and the point where the AR curve would cut the x-axis.
- Draw on the MR curve – falling at twice the gradient of the AR curve.
- Finally add the MC curve – this needs to cross the MR curve at the same output as the point where AR and AC are tangential, i.e. just touch. The MC curve also needs to cut the AC curve at the minimum point. It is easier to draw the MC curve last so you can make sure MR = MC is where AR = AC and that MC also cuts AC at its minimum point.

SUBJECT VOCABULARY

monopolistic competition a market structure where a large number of small firms produces non-homogeneous products and where there are no barriers to entry or exit

12 Oligopoly

THE IMPORTANCE OF OLIGOPOLY

Most markets could be said to be imperfectly competitive. A few are monopolistically competitive but the majority are **concentrated markets,** dominated by a few suppliers. Therefore the theory of oligopoly is arguably the most important of the theories of the firm. Yet there is no single dominant model of **oligopoly** within economics.

In the rest of this chapter, we will consider **market conduct.** This is how oligopolistic firms behave in order to achieve their objectives.

ASSUMPTIONS OF OLIGOPOLY

For an industry to be called 'oligopolistic', there must be two key characteristics of its market structure:

• Supply in the industry must be concentrated in the hands of relatively few firms. For instance, an industry where the three largest firms produce 80 per cent of output would be oligopolistic.

• Firms must be **interdependent**. In perfect competition, firms are independent, while in oligopoly, one firm's actions directly affect another. Interdependence means firms face uncertainty, as they cannot predict how other firms will react to changes in their competitive strategy, such as price or product range.

Economists are also interested in two other characteristics of oligopolistic markets:

• Are there barriers to entry to the market? In this chapter, we will assume that oligopolistic markets have high barriers to entry and exit.

• Are products differentiated? If there is product differentiation, then each firm sells slightly different products.

BARRIERS TO ENTRY AND EXIT

There are a number of barriers to entry which prevent potential competitors from entering an industry.

Economies of scale For oligopolies, economies of scale are often very large. A few firms operating at lowest average cost (the optimum level of production) can satisfy all the demand of buyers. New firms entering the market are likely to produce less and therefore have much higher average costs than the few established producers.

Patents Patent laws can prevent competitor firms from making a product for a given number of years after its invention. Pharmaceutical firms are only likely to carry out research and development for new medicines if they can regain the huge costs of investment by charging high prices for a period of time, while they are protected from competition by patents.

Branding Large firms in an industry may be able to put in place very high barriers to entry through high spending on advertising and marketing. This makes consumers associate a particular type of good with the firm's product, creating a powerful brand image.

Sunk costs Sunk costs, such as advertising, are unavoidable costs that a firm cannot recover if it leaves the industry. Other barriers to exit include the time and cost of employee redundancy, inventory sales, and customer notification, which increase when employment laws are more stringent.

Legal barriers The law may give firms particular privileges. The government may give a firm exclusive rights to the production of a product.

Limit pricing There is more information about limit pricing on page 90. (student book 2)

INTERDEPENDENCE OF FIRMS

In an oligopoly, a few large firms have interdependent actions that affect other firms in the market. For example, if one firm reduces its price, other firms will react to it, potentially reducing prices to maintain market share. This results in firms acting differently in different market structures.

Game theory attempts to explain how firms may behave in an oligopoly but interdependence may lead to **collusion** or the forming of a **cartel**. Also, the effect of interdependence on the pricing policies of these large firms may lead to **price leadership or price wars** in these markets.

COLLUSION

Oligopolistic firms may compete among themselves. However, there is a very strong incentive for oligopolistic firms to collude. This means they make agreements among themselves so as to restrict competition and maximise their own benefits. **Collusive oligopoly** is said to exist when oligopolistic firms collude.

Formal collusion exists when firms make overt or covert agreements among themselves to limit competition. For example, two firms in a market may share new contract work between themselves or agree not to sell in certain geographical areas. They may come to a **price agreement** where they fix prices for their products.

Tacit collusion is when firms do not make any formal agreements about cooperating together but instead, monitor each other's behaviour closely. Unwritten rules are developed which become custom and practice, defining ways in which firms may or may not compete.

One form of tacit collusion is price leadership. This is when one firm in the market sets a price that other firms in the market follow. The price leader is often the largest firm (the dominant firm) in the market and the **price followers** are the smaller firms in the market. The firms in the industry effectively collude to maximise their profits.

GAME THEORY

One way to understand why collusion, whether formal or tacit, benefits all firms in the market is to use game theory. Game theory is a theory which can be used in many subject disciplines, not just economics.

The most famous example of game theory is the **prisoner's dilemma**. Two individuals have committed a crime together and have been arrested. They are kept in separate cells. Each prisoner knows that there is enough evidence to find them guilty of a related minor charge for which they can expect to serve six months in jail. However, they have been arrested for a more serious offence.

Firm A and Firm B should decide which strategy to use in a market. Firm A can earn more profit if both firms raise their prices, while Firm B can only earn $30 million if both firms remain unchanged. The safest option is to leave prices unchanged, but if firms collude, they will both benefit. In an unstable market, there is no set of strategies that would make both firms better off, as they constantly adjust prices to take advantage of each other's decisions.

		Firm B	
		Raise price	Leave price unchanged
Firm A	Raise price	$100m/$70m	$30m/$40m
	Leave price unchanged	$40m/$20m	$50m/$30m

▲ Table 2 A payoff matrix which shows that two firms have an incentive to collude

		Firm B	
		Raise price	Leave price unchanged
Firm A	Raise price	$40m/$15m	$30m/$25m
	Leave price unchanged	$10m/$35m	$50m/$10m

▲ Table 3 A payoff matrix which shows an unstable market

CARTELS

A cartel is a formal agreement among firms to limit output and raise prices. The most famous cartel today is OPEC, a group of oil-producing countries. OPEC restricts supply and negotiates production quotas every six months, aiming to influence oil prices. This is an example of formal collusion.

For a cartel to function effectively, a number of conditions must apply:

• An agreement has to be reached. This is likely to be easiest in oligopolistic industries where only a few firms dominate the market; the larger the number of firms, the greater the possibility that at least one main firm will refuse to collude.

• Cheating has to be prevented. Once an agreement is made and profitability in the industry is raised, it would benefit an individual firm to cheat so long as no other firms do the same.

• Potential competition must be restricted. Supernormal profits will encourage not only existing firms in the industry to expand output but also new firms to enter the industry. Firms already in the industry which do not join the cartel may be happy to follow the policies of the cartel in order to earn supernormal profits themselves. Firms in the cartel could also agree to increase barriers to entry to the industry.

COSTS AND BENEFITS OF COLLUSION TO PRODUCERS, CONSUMERS, WORKERS AND GOVERNMENTS

Collusion allows producers to charge higher prices, leading to higher profits for firms. Markets become less competitive, reducing advertising expenses and cost savings. Firms cannot expand sales due to output quota restrictions.

Consumers will see more stability in the market as firms are less likely to leave the market and output will be more assured. However, consumers will pay higher prices than if there was no collusion and there will be a lower output to purchase. Restricted competition between firms may also mean there is less choice as consumer preferences are less important to the firms in the market.

Workers will benefit from a stable output of products so workers are less likely to lose their jobs due to firms going bankrupt. If firms earn supernormal profit then it might be possible for workers to gain a wage increase. However, because there are a restricted number of firms in the market there are likely to be fewer opportunities to move to another firm.

Government will possibly receive higher tax payments from firms earning higher profits. However, there is less competition in the market if firms collude and this is likely to lead to inefficiency. Therefore firms are not likely to be allocatively efficient or productively efficient and they may not be dynamically efficient either.

TYPES OF PRICE COMPETITION IN OLIGOPOLY

Firms in an oligopolistic market can engage in a variety of types of price competition. Three examples are price wars, predatory **pricing and limit pricing.**

PRICE WARS

Price wars are often triggered in markets with weak non-price competition, weak branding, and price-conscious consumers. These conflicts drive prices down, leading to frequent losses for firms. In the short run, firms stay in the market to cover variable production costs and fixed costs. In the long run, prices must rise due to supply or demand changes.

PREDATORY PRICING

Predatory pricing is a strategy where an established firm sets a low price to discourage a new entrant from entering the market, aiming to drive them out. It can also be used by one firm against another to defend its market share, potentially taking away or forcing the other firm out of the market.

LIMIT PRICING

Limit pricing is a strategy where firms set a low price to discourage new entrants from entering the market. For instance, if four firms charge $10 for a good, if they earn high profits, new entrants may enter. To maintain market share and profit, existing firms should charge lower than $10. The limit price is higher for higher barriers to entry, such as high initial costs that cannot be recovered if the new entrant leaves.

TYPES OF NON-PRICE COMPETITION

In an oligopoly, firms do not usually benefit from competing in terms of price. Lowering prices may just lead to all the large firms reducing their prices and only the consumers benefit as the firms earn lower revenue and often lower profit. If there is no collusion, large firms will compete using non-price competition.

ADVERTISING AND BRANDING

Advertising and branding are essential to inform buyers in the market that the good is on sale and to change their views of a product in a favourable manner. It is one-way communication from a firm to potential customers (for example via ads on television, in newspapers, or on social media). Promotion includes ways to encourage the consumer to make a purchase such as competitions, free samples, buy-one- get-one-free offers or discount vouchers.

QUALITY

A brand can be differentiated as being of a high quality to make it stand out from competitors' brands. Examples are sports shoes where the main global companies, such as Nike or Adidas, brand their sports shoes as much higher quality than the many other sports shoes on the market. Firms will often charge a premium price for products that are perceived as higher quality than competitors' products.

ENDORSEMENT

Some firms pay famous people to use their products and feature in their advertising, such as the deal between Serena Williams and Tempur mattresses, or the singer, Rihanna, seen wearing New Balance clothing and shoes. This encourages consumers to have faith in the brand as being of good quality, which leads to brand loyalty and higher sales for these firms.

PRODUCT PLACEMENT

Product placement is a way to develop consumer awareness of brands in the target market by featuring them indirectly in the media. Transformers 4, released in cinemas in 2014, featured various Chinese products, including bottled water and banking brands. The companies behind these brands went to great expense to have their products included in the film to promote the brands in China.

AFTER-SALES SERVICE

Some firms offer excellent after-sales service so that customers will prefer to buy from them rather than a firm that just offers the guarantee required by law.

COSTS AND BENEFITS OF PRICE AND NON-PRICE COMPETITION TO FIRMS, CONSUMERS, EMPLOYEES AND SUPPLIERS

Firms If price elasticity of demand is elastic then if firms lower prices it will result in revenue increasing because the loss in revenue from the lower price will be more than made up by the higher proportionate increase in sales. Lower prices mean profit margins are lower.

Non-price competition, such as advertising or promotions, attracts customers and is likely to increase sales and also sales revenue. However, advertising and promotion are expensive and add to firms' costs, reducing profitability.

Consumers Price competition will benefit consumers as prices will be lower. However, if firms lower prices they may not maintain the same quality of products.

Employees in an oligopoly the large firms are likely to benefit from higher sales and this may make jobs more secure. However, if firms earn less revenue because they are competing on price, this may mean costs are kept down by lower wages and workers will not benefit. This is especially true if there are only a few firms in the market as there will be fewer job opportunities.

Non-price competition may create a brand that employees enjoy being associated with. However, higher costs for the firm due to non-price competition may mean costs are kept down through lower wages. Again this will be

especially true if there are few firms in the market and there are few opportunities for employees to find jobs with other firms.

Suppliers As large firms in an oligopoly are dominant in the market, suppliers may have increased sales if the firms' goods sell well due to lower prices if firms are competing in terms of price. However, if firms are keeping prices low then they may put pressure on their suppliers to reduce the prices they pay for their supplies so the oligopolist can maintain profit margins.

SUBJECT VOCABULARY

cartel a group of firms that have made a formal agreement to limit competition in the market, for example by limiting output in order to raise prices

collusion collective agreements, either formal or tacit, between firms that restrict competition

collusive oligopoly a market with a high concentration ratio where a few interdependent firms cooperate, either formally or tacitly, to restrict competition

concentrated market a market where most of the output is produced by a few firms and where therefore the concentration ratio is high

consumer surplus the difference between how much buyers are prepared to pay for a good and what they actually pay

formal collusion when firms make agreements among themselves to restrict competition, typically by reducing output, raising prices and keeping potential competitors out of the market; cartels are one example of formal collusion

game theory the analysis of situations in which players are interdependent

interdependent a situation where the actions of one large firm will directly affect another large firm

limit pricing when firms set a low enough price to deter new entrants from coming into the market

market conduct the behaviour of firms, such as pricing policies, promotion of products, branding and collusion with other firms

oligopoly a market structure where there is a small number of firms in the industry and where firms are interdependent with one another, creating uncertainty; barriers to entry are likely to exist

predatory pricing a pricing strategy where an incumbent firm lowers its prices when a new entrant comes into the market in order to force the competitor out of the market, and then puts prices back up again once this objective has been achieved

price agreement a type of formal collusion where two or more firms arrange to fix prices of their products

price follower a firm which sets its price by reference to the prices set by the price leader in a market

price leadership when one firm, the price leader, sets its own prices and other firms in the market set their prices in relationship to the price leader

price wars a situation where several firms in a market repeatedly lower their prices to outcompete other firms; the objective may be to gain or defend market share

prisoner's dilemma a game where, given that neither player knows the strategy of the other player, the optimum strategy for each player leads to a worse situation than if they had known the strategy of the other player and been able to co-operate and co-ordinate their strategies

tacit collusion when firms collude without any formal agreement having been reached and where there is no explicit communication between firms about strategies; an example is price leadership

13 Monopoly and monopsony

MONOPOLOY AND MONOPSONY

Monopoly and monopsony are situations where one firm dominates the market. In the case of monopoly, it is a single seller of a good or service, whereas for monopsony it is a single buyer of a good or service. In this chapter monopoly will be considered first and then monopsony.

ASSUMPTIONS OF MONOPOLY

The assumptions for monopoly are that it has the following characteristics:

- there is only one firm in the industry - the **monopolist**
- barriers to entry prevent new firms from entering the market
- the monopolist is a short-run profit maximiser.

In a **pure monopoly,** there is only one firm in the market. However, in many markets, there are a number of firms that have **monopoly power.** This occurs when a firm is able to control the price it charges for its product in a market.

SOURCES OF MONOPOLY POWER

Monopolies acquire and maintain power over their markets for a variety of reasons.

Barriers to entry and exit Monopolists control the market by implementing barriers to entry and exit, such as legal, sunk costs, capital costs, economies of scale, anti-competitive practices, and marketing barriers. Higher barriers strengthen their power, as seen with Dyson's patents.

Product differentiation and the number of near competitors Some monopolists sell products which are clearly differentiated from rival products.

Quantity	Average revenue or price	Total revenue	Marginal revenue
	$	$	$
0	0	0	
1	8	8	8
2	6	12	4
3	4	12	0
4	2	8	–4
5	0	0	–8

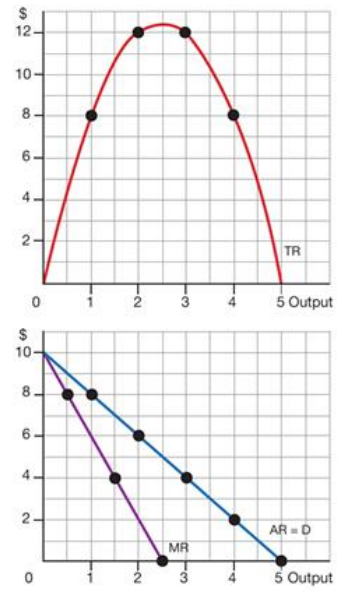
▲ Table 1

REVENUE CURVES

A monopoly firm, like the industry itself, faces a downward sloping demand curve. It can only increase sales by reducing price or increase price by reducing sales. The demand curve shows the quantity bought at any given price. If average revenue is falling, marginal revenue must be falling too, at a faster rate. For example, a firm selling 10 units at $20 each needs to lower its price to $19.

FIGURE 1

The revenue curves of a monopolist
A monopolist, being the sole supplier in the industry, faces a downward sloping demand or average revenue curve. Marginal revenue falls at twice the rate of average revenue and becomes zero when total revenue is maximised.



PROFIT MAXIMISING EQUILIBRIUM OUTPUT

The neo-classical theory of the firm assumes that a monopolist will be a short-run profit maximiser. This means that it will produce where MC = MR.

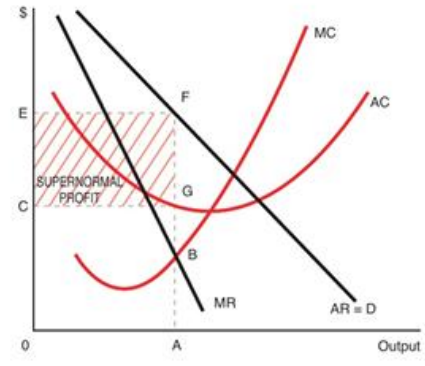
Figure 2 adds the traditional U-shaped average and marginal cost curves to the average and marginal revenue curves outlined above.

- The equilibrium profit maximising level of output is OA where MC = MR.
- The price will be OE. Buyers are prepared to pay OE for this output. We know this because the average revenue curve is also the demand curve and the demand curve shows the maximum price buyers will pay for any given level of output.
- Supernormal profit of EFGC will be made. The supernormal profit per unit (GF) is the difference between the average revenue received (AF) and the average cost incurred (AG). OA units are sold. Therefore total supernormal profit is OA X FG, or the area EFGC.

Supernormal profit is not the area between the average revenue and cost curves, but the difference between average revenue and average cost. Monopolies can earn supernormal profit in the long run as long as high barriers to entry and demand curves remain. In the short run, a monopolist may operate at a loss but close down if it cannot cover variable costs. In the long run, a monopolist must produce where MC = MR, but average cost is greater than revenue.

FIGURE 2

Profit maximising output
The monopolist will maximise profits by producing where MC = MR at OA. It will base its prices on its average revenue curve, charging OE. It will be able to earn supernormal profit of EFGC because average revenue is greater than average cost at this level of output.



NATURAL MONOPOLY

A natural monopoly occurs when the long-run average cost curve falls continuously, allowing economies of scale to be gained as output increases. If multiple firms compete, each firm's gains decrease, leading to higher costs.

The implications of this are:

- one firm will tend to supply the whole market because if another firm tries to enter the market it will not be able to compete, as it will have higher costs than the existing firm

- prices may be lower if there is only one firm in the market and it passes on its cost savings. Prices would probably be higher if more than one firm supplied the market.

The main examples of industries that are natural monopolies are utilities such as gas supply, electricity supply, rail networks, telephone lines and internet cables. A natural monopoly is shown in Figure 4.

FIGURE 3

An industry where no firm will produce
The figure shows an industry in the long run. Because LRAC is greater than AR, no firm will be prepared to operate and therefore no goods will be produced.

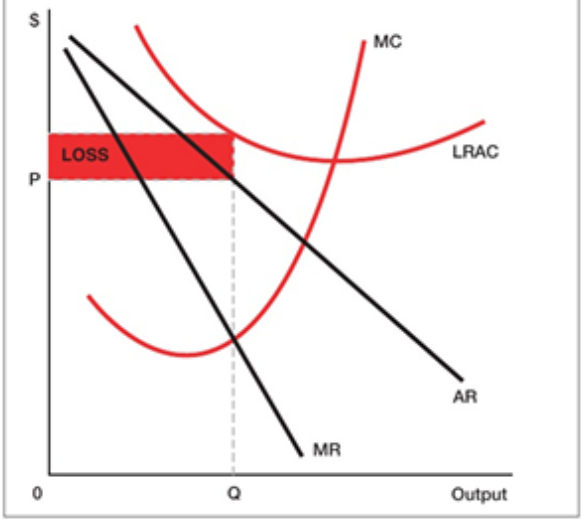
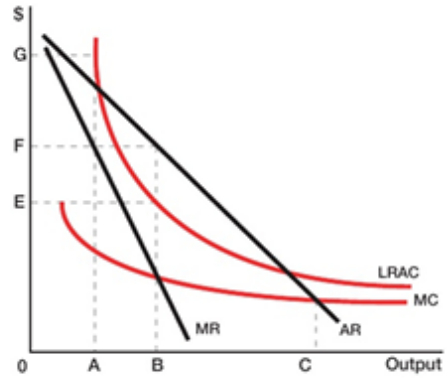


FIGURE 4

Natural monopoly
In a natural monopoly, economies of scale are so large that not even a single producer could fully exploit them. Competition would be highly inefficient, raising the average cost of production. The profit maximising level of output for the monopolist is OB, but output would be greater at OC where price = MC.



More competition in the industry would result in a loss of productive efficiency, not a gain. Also, producing at the allocative efficient level of output where price = MC would result in a loss for the firm. At output OC, average revenue is less than average cost. In the long run, a firm must at least make normal profit to stay in the industry. Hence in the long run, no firm in this industry would produce at the allocatively efficient level of production.

COSTS AND BENEFITS OF MONOPOLY TO FIRMS

• A monopolist is likely to have high barriers to entry and can therefore earn supernormal profits in both the short run and the long run. Competition is kept out of the market and this makes the owners of the firm secure in the high dividends paid to shareholders.

• However, this may lead to X-inefficiency because of lack of competitive pressures: managers may not try to maximise profit, instead aiming to earn a satisfactory profit that is acceptable to shareholders. Monopolists could choose to revenue maximise or sales maximise because managers in the business gain greater rewards from this strategy than from profit maximising.

• The supernormal profit earned by a monopolist can be used for research and development. The costs of this may be too high for smaller firms in competitive markets.

• Monopolists can afford to invest in the latest technology and equipment to remain efficient and reduce the risk of competitors entering the market.

The monopolist will have the resources from its supernormal profits to spend on research and development.

• The monopolist will also have an incentive to spend on innovation. It will be able to exploit any new products or new techniques of production to its own advantage, safe from competitors behind its high entry barriers. Productive efficiency will increase because costs will fall. Allocative efficiency will increase because the monopolist will bring new products to the market.

• A monopolist may reduce waste by avoiding supplying copies or substitutes for its products if it is operating in a natural monopoly. This keeps costs down and increases efficiency.

• The government may set a high level of tax on monopoly profits. This high taxation will not distort the market as it will only reduce supernormal profit; it will not cause the monopolist to leave the industry and therefore resources remain allocated to this industry.

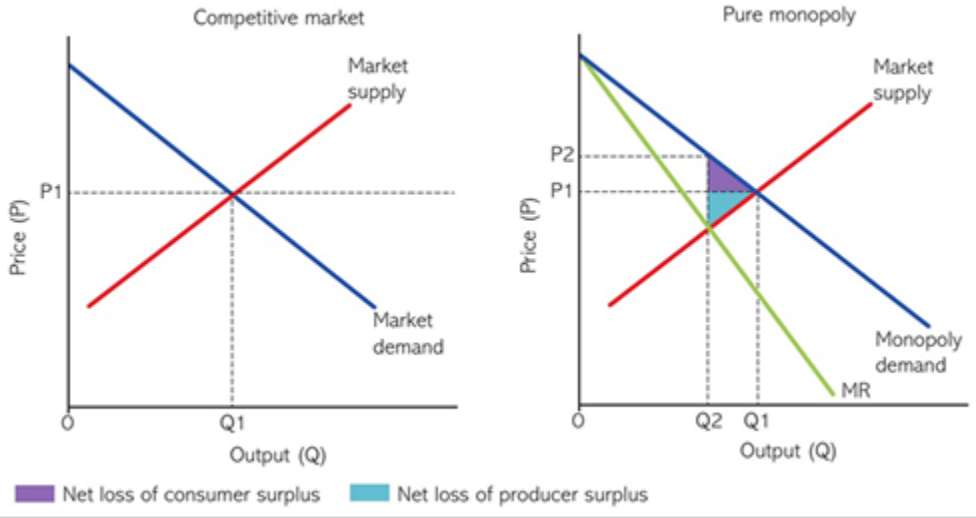
COSTS AND BENEFITS OF MONOPOLY TO CONSUMERS

A monopolist, as a profit maximiser, is likely to set a price above that expected in a competitive market. The output sold will also be lower. The higher prices leads to a loss of consumer surplus and the product is under-consumed relative to the consumption in a competitive market.

This is shown in Figure 5. The price charged in a competitive market is where demand equals supply at a price of P1 and an output of Q1.

FIGURE 5

The loss of the producer and consumer surplus is known as the deadweight welfare loss or social cost of monopoly



• There may be a poor level of service or the goods may be of poor quality as there is no incentive to improve due to little or no competition.

• However, if the monopolist firm is able to benefit from economies of scale its costs will be lower than in a competitive market. The lower average cost will enable the firm to charge a price below the price charged in a competitive market.

• Even if the monopolist benefits from economies of scale, they have little incentive to control their costs and X-inefficiencies mean that there will be no real cost savings compared to a competitive market.

• The higher average cost from X-inefficiency means the firm is not making optimum use of scarce resources and is productively inefficient.

• There may be less incentive to invest in new ideas if the monopolist does not face competition in the market. This may lead to consumer goods and services being slow to innovate and improve.

• Some consumers could be better off if the monopolist price discriminates (as explained later in this chapter), as these consumers may benefit from lower prices. Other consumers, though, could be even worse off as they would be charged much higher prices.

• A natural monopoly can benefit consumers even if the monopolist maximizes profits. However, if the firm splits into competing firms, prices may be higher under competition. The consumer's benefit depends on the cost and revenue curves.

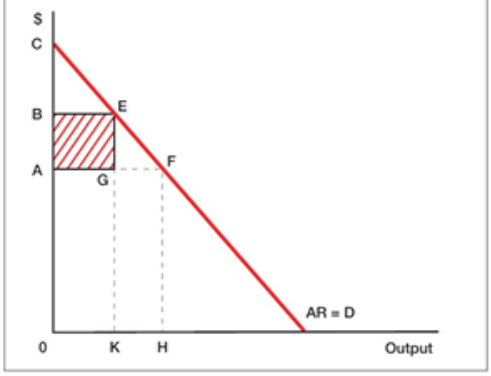
PRICE DISCRIMINATION

Some buyers in the market will almost certainly be prepared to pay a higher price for a product than other buyers. A monopoly diagram illustrates how marginal consumers are prepared to pay different prices for goods.

Price discrimination under monopoly is often split into three types. Third-degree price discrimination is the type of discrimination described above. First- degree price discrimination occurs when a firm is able to charge each customer a different price. That price is the maximum price the customer will pay. As a result, consumer surplus will be completely extracted by the monopolist and converted to producer surplus. Second-degree price discrimination is when a monopolist charges customers according to how much they buy.

FIGURE 6

The gains of consumer surplus by the monopolist
A monopolist can gain ABEG of consumer surplus from consumers by price discriminating, selling OK output to those consumers prepared to pay a minimum OB, and selling KH to other consumers only prepared to pay a minimum OA.



There are a number of different ways in which a monopolist may be able to discriminate:

• **Time** it may charge a different price at different times of the day or week, as do the electricity distribution companies, rail companies, airlines at different times of the year.

• **Place** - it may vary price according to the location of the buyer. The same soft drinks can be purchased at different prices in different parts of the city, such as shopping malls or in shops in poor areas.

• **Income** - it may be able to split consumers into income groups, charging a high price to those with high incomes, and a low price to those with lower incomes.

Three conditions must hold if a monopolist is to be able to price discriminate effectively:

• The monopolist must face different demand curves from separate groups of buyers (i.e. the elasticity of demand of buyers must differ). If all buyers have the same demand curve, the monopolist cannot charge different prices to buyers.

• The monopolist must be able to split the market into distinct groups of buyers, otherwise it will be unable to distinguish between those consumers prepared to pay a higher price and those prepared to pay a lower price.

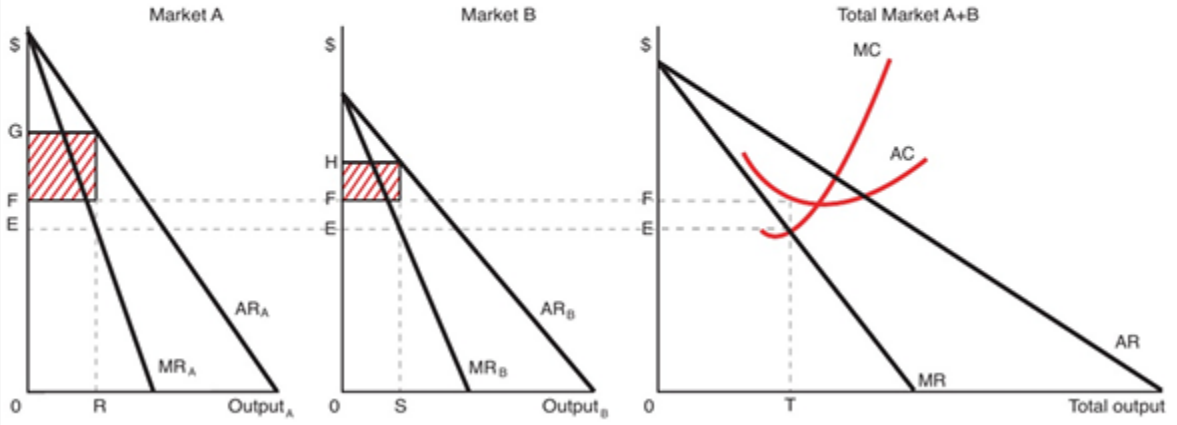
• The monopolist must be able to keep the markets separate at relatively low cost. For instance, it must be able to prevent buyers in the high-price market from buying in the low-price market.

• They should have sufficient monopoly power so that consumers who are charged the higher price do not switch to competitors.

FIGURE 7

Price discrimination

By charging a different price in two markets, a monopolist is able to earn higher profits than it would if it charged the same price.



COSTS AND BENEFITS FOR PRODUCERS AND CONSUMERS FROM PRICE DISCRIMINATION

Price discrimination benefits firms by increasing profits and appropriating producer surplus from consumer surplus. However, consumers may lose out as they pay higher prices. Price discrimination can lead to cheaper prices for some customers and expand the market, as seen in a monopolist setting two prices, $15 and $8, resulting in customers who would otherwise have paid $10 or not bought the product at all.

EFFICIENCY IN MONOPOLY

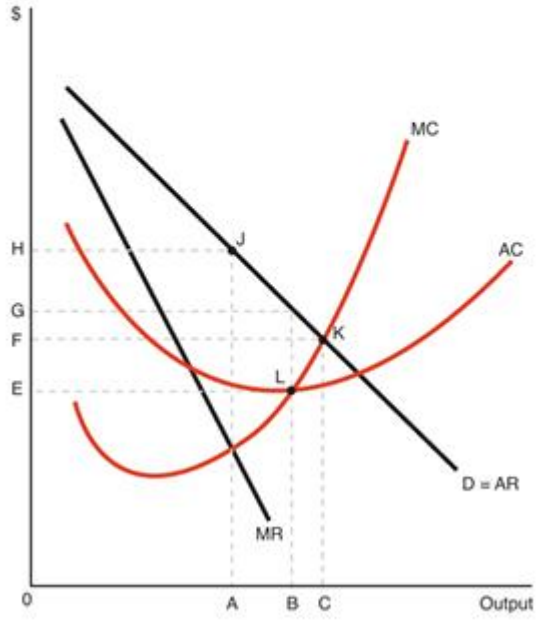
Monopolies maximize profit but are neither productive nor allocatively efficient, as they produce too little and charge too high prices, resulting in lower consumer and producer surplus. Natural monopolists are more productive and efficient than competition, but they may not be more dynamically efficient in industries with competing firms, as higher investment leads to greater innovation.

- Consumer surplus would have been TRI if output was at OC, the allocatively efficient level of output. It now falls to SRH. So consumer surplus falls by TSHJ.
- Producer surplus would have been VTJL if output was at OC, the allocatively efficient level of output. It now rises to VSHL. Note that the monopolist has gained TSHM of producer surplus, which would have been consumer surplus if output had been at OC.

FIGURE 8

Monopoly and efficiency

A profit maximising monopolist will produce at output OA. This is lower than the productively efficient level of output of OB and also lower than the allocatively efficient level of output of OC.



ASSUMPTION OF MONOPSONY

A monopsony exists when there is a dominant buyer in the market.

There are very few pure monopsonists but there can be a number of markets where one buyer dominates the market. This is often where the government is the main or only buyer in the market.

CONDITIONS OF MONOPSONY

A pure monopsony exists when there is only one buyer in the market. This is relatively rare in practice. However, there are many more examples of firms that have monopsony power. This means that they are a large enough buyer in the market to be able to change the price at which they buy from suppliers.

The more a firm buys as a percentage of total sales in the market, the more monopsony power it is likely to have.

- Firms in a contestable market are likely to be allocatively efficient, as they can only earn normal profit in the long run. This is because average revenue equals average cost, and marginal cost equals average cost. This condition for allocative efficiency is crucial.
- However, if there are fewer firms in the market consumer choice may be limited.

THINKING LIKE AN ECONOMIST

There may be less innovation as the possible benefits for firms may be reduced, deterring these firms from entering into the market and leading to fewer new products being developed.

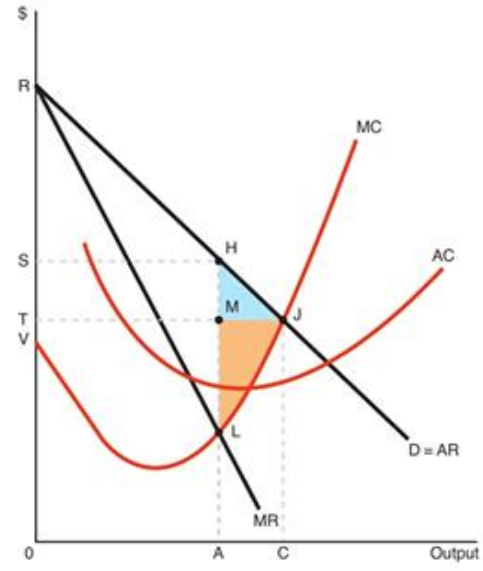
DEGREES OF CONTESTABILITY

No market is perfectly contestable, but some are more contestable due to lower barriers to entry and exit. High sunk costs and high technical knowledge requirements can lead to high barriers to entry. Firms can also use patents on products to erect barriers, making the market less contestable.

FIGURE 9

Deadweight loss associated with monopoly
Compared to the allocatively efficient point of production at J, there will be a deadweight loss of welfare of LHJ if a monopolist produces at OA, the profit maximising level of output. Comparing output at OC with OA:

- consumer surplus falls by TSHJ
- producer surplus rises by TSHM – LMJ
- LMJ is a deadweight loss of producer surplus
- MHJ is a deadweight loss of consumer surplus.



SUBJECT VOCABULARY

contestable market a market where there is freedom of entry to the industry and where costs of exit are low

hit-and-run competition when firms can enter a market at low cost attracted by high profits and then leave the market at low cost when profits fall

sunk costs costs which cannot be recovered when a firm leaves an industry

Chapter 14 Contestability

CONTESTABLE MARKET THEORY VS NEO-CLASSICAL THEORY

Many, if not most, markets in industrialised economies are dominated by a few producers. The neo-classical theory of oligopoly assumes that oligopolistic markets feature high barriers to entry. However, there is also evidence to suggest that many oligopolistic markets have low barriers to entry. Therefore, firms in the industry are likely to behave in a different way from that predicted by neo-classical theory. The theory of **contestable markets explores** the implications of low barriers to entry and exit in markets.

CHARACTERISTICS OF CONTESTABLE MARKETS

The theory of contestable markets has a number of characteristics.

- The number of firms in the industry may vary from one (a monopolist) having complete control of the market, to many, with no single firm having a significant share of the market.
- In a contestable market, there is freedom of entry to and exit from the market. This means there will be no sunk costs. This is a significant characteristic of the model. Its implications are discussed below. Firms compete with each other and do not collude to fix prices.
- Firms are short-run profit maximisers, producing where MC = MR.
- Firms may produce homogeneous goods or they may produce branded goods.
- There is perfect knowledge in the industry.
- The potential for hit-and-run competition exists.

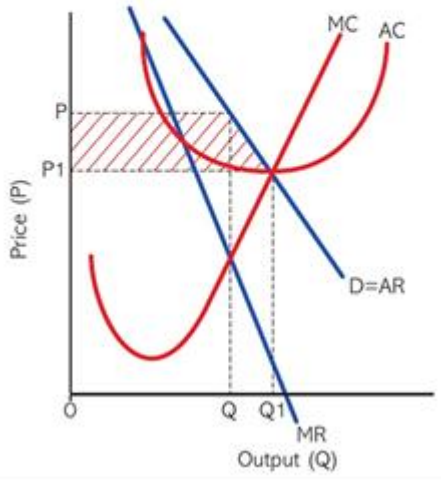
PROFITABILITY

The theory of contestable markets shows that in a contestable market:

- Supernormal profits can be earned in the short run
- Only normal profit can be earned in the long run. Assume that firms in a contestable market are making supernormal profit in the short run. New firms will be attracted into the industry by the supernormal profit.

FIGURE 1

The output and price in a profit maximising monopoly would be P and Q with a supernormal profit shown as the shaded area. A firm in a contestable market would keep prices lower at P1 and output at Q1, leading to only normal profit being earned in the long run.



PRICING DECISIONS

In contestable markets, firms often use limit pricing to set lower prices than they would charge if they maximized short-run profits. This strategy deters new entrants and prevents them from entering the industry. However, if new firms enter, they could lose their supernormal profits and sales, further deterring new entrants.

ENTRY TO AND EXIT FROM THE INDUSTRY

In a contestable market, firms' ability to enter and leave an industry is crucial, not necessarily linked to the number of firms. In neo-classical theory, low barriers to entry are associated with large firms, while high barriers are associated with few firms. However, contestable market theory suggests that supernormal profits in industries with natural or high barriers depend on exit costs, or sunk costs.

SIGNIFICANCE OF SUNK COSTS

Sunk costs, such as advertising and the difference between the purchase price and resale price of capital equipment, can significantly impact a firm's profitability. For instance, a gardening business owner may recover some money by selling the van and tools, but not from advertising, thereby encouraging entry into new industries.

COSTS AND BENEFITS OF CONTESTABILITY TO FIRMS

• Contestable markets may make it easier for firms to exist in the market without new firms entering the market and increasing competition. However, this is often as a result of the behaviour of these firms to deter new entrants.

• It is easy for new firms to enter the market and start to compete with existing firms in the market. This may be a benefit or disadvantage to a firm depending on whether this is from the point of view of the new entrant or the existing firm.

• Firms will only earn normal profit in the long run and possibly in the short run as well. This will reduce the amount of retained profit available for research and development, but losses may be less likely as there may be more stability in the market.

• Firms will have to keep costs down in order to remain competitive and therefore reduce or eliminate X-inefficiency.

• Firms may use limit pricing to deter new entrants and therefore only earn normal profit.

• Firms in strongly contestable markets with low barriers to entry and exit are also likely to be productively and allocatively efficient.

COSTS AND BENEFITS OF CONTESTABILITY TO CONSUMERS

• In a competitive market, prices tend to be lower due to new entrants. If a firm isn't at the bottom of its cost curve, a new entrant can establish itself and price below existing firms, requiring firms to be productively efficient.

• If large firms dominate a contestable market, economies of scale could still be achieved, keeping average costs low. Remember contestability is about the ease of entry into and exit from the industry and therefore the behaviour of these firms rather than the number of firms there are in the industry. This may lead to lower prices being charged, which benefits consumers and increases consumer surplus.

• There are increased incentives for firms to respond to consumer preferences. Firms are likely to be allocatively efficient. Firms in a contestable market can only earn normal profit in the long run. Hence average revenue must equal average cost (AR = AC). If firms are producing at the bottom of their average cost curve, then marginal cost must equal average cost (MC = AC).

DEGREES OF CONTESTABILITY

It can be argued that no market is perfectly contestable. There are always some barriers to entry and exit which may deter hit-and-run competitors, for example. However, some markets are more contestable than others. The lower the barriers to entry and exit, the more contestable a market is likely to be. Hence, there are degrees of contestability across markets. In its lowest point. Hence, since equilibrium output will reality some markets are highly contestable, others are be where AR = AC and where MC = AC, it must be true that firms produce where AR (which is price) = MC. This is the condition for allocative efficiency (see Figure 1).