

NINTH EDITION

ECONOMICS FOR BUSINESS

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ECONOMICS FOR BUSINESS

worry about how its rivals will react. It assumes that what its rivals choose to do will not be influenced by what it does.

This is known as the assumption of *independence*. As we saw in chapter 11 and we discuss later, this is not the case under oligopoly.

- *Freedom of entry of new firms.* If any firm wants to set up in business in this market, it is free to do so.

In these two respects, therefore, monopolistic competition is like perfect competition. The third assumption, however, is different from perfect competition.

- *Differentiated products.* Each firm now produces a product or provides a service that is in some way different from its rivals. This is known as the assumption of *product differentiation*. This gives the firm some degree of market power, meaning it can raise its price without losing all its customers. Thus its demand curve is downward sloping, albeit relatively elastic given the large number of competitors to which customers can turn.

Petrol stations, restaurants, hairdressers and builders are all examples of monopolistic competition – as is the case of busking, which is discussed on the Freakonomics blog,¹ as too was John's experience of selling ice cream (see Box 10.2 on page 174).

When considering monopolistic competition, it is important to take account of the distance consumers are willing to travel to buy a product. In other words, the geographical size of the market matters. For example, Costa is a major coffee retailer, but, in any one location, it experiences intense competition from other coffee shops, cafés, restaurants and bars, as well as other places where other drinks can be purchased. So, in any one local area, there is competition between firms, each offering differentiated products.

¹ <https://freakonomics.com/2012/05/21/the-economics-of-busking/>

Equilibrium of the firm

Short run

As with other market structures, profits are maximised at the output where $MC = MR$. The diagram will be the same as for the monopolist, except that the AR and MR curves will be more elastic, due to more competition. This is illustrated in Figure 12.1(a). As with perfect competition, it is possible for the monopolistically competitive firm to make supernormal profit in the short run. This is shown as the shaded area.

Just how much profit the firm will make in the short run depends on the strength of demand: the position and elasticity of the demand curve. The further to the right the demand curve is relative to the average cost curve, and the less elastic the demand curve is, the greater will be the firm's short-run profit. Thus a firm facing little competition and whose product is considerably differentiated from its rivals may be able to earn significant short-run profits.

Pause for thought

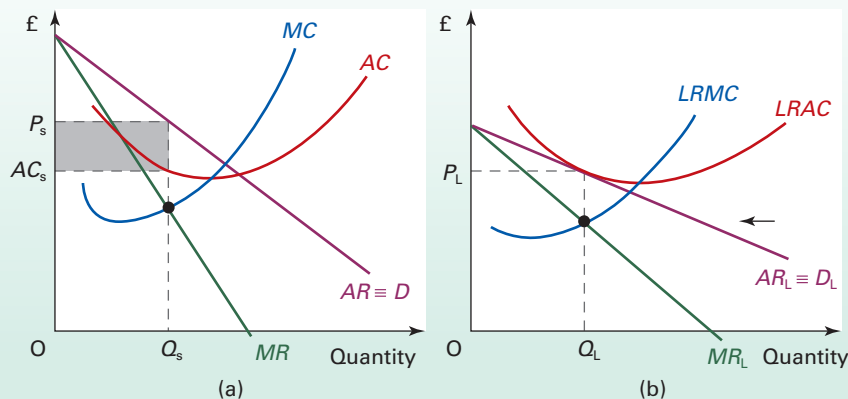
Which of these two items is a petrol station more likely to sell at a discount: (a) engine oil; (b) sweets? Why?

Definitions

Independence (of firms in a market) When the decisions of one firm in a market will not have any significant effect on the demand curves of its rivals.

Product differentiation When one firm's product is sufficiently different from its rivals', it can raise the price of the product without customers all switching to the rivals' products. This gives a firm a downward-sloping demand curve.

Figure 12.1 Equilibrium of the firm under monopolistic competition: (a) short run; (b) long run



Long run

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If typical firms are earning supernormal profit, new firms will enter the industry in the long run. As new firms enter, they will take some of the customers away from established firms. The demand for the established firms' products will, therefore, fall. Their demand (AR) curve will shift to the left and will continue doing so as long as supernormal profits remain and thus new firms continue entering.

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Long-run equilibrium will be reached when only normal profits remain: when there is no further incentive for new firms to enter. This is illustrated in Figure 12.1(b). The firm's demand curve settles at D_L , where it is tangential to (i.e. just touches) the firm's $LRAC$ curve. Output will be Q_L : where $AR_L = LRAC$. (At any other output, $LRAC$ is greater than AR and thus less than normal profit would be made.)

It is important to note that there is a difference between the transition from the short run to the long run under perfect competition and monopolistic competition even though in long-run equilibrium, firms in both market structures earn just normal profits. Under perfect competition, when new firms enter (or leave) the market, it is the *industry supply curve* that shifts, which changes the market price and leaves just normal profits. Under monopolistic competition, however, the entry of new firms is reflected by shifting an established firm's *demand curve* inwards and this eliminates the supernormal profits.

Limitations of the model

As all firms under monopolistic competition are producing a slightly differentiated product, each firm is different and hence we cannot create an industry demand or supply curve. Instead, we have to focus on the effect on a given firm when new firms enter the market. This is a limitation of the model.

In addition, there are various other problems in applying the model of monopolistic competition to the real world:

- Information may be imperfect. Firms will not enter an industry if they are unaware of the supernormal profits currently being made or if they underestimate the demand for the particular product they are considering selling.
- Firms will differ from each other, not only in the product they produce or the service they offer, but also in their size and in their cost structure. What is more, entry may not be completely unrestricted. For example, two petrol stations could not set up in exactly the same place – on a busy crossroads, say – because of local authority planning controls. Thus, although the typical or 'representative' firm may earn only normal profit in the long run, other firms may be able to earn long-run supernormal profit. They may have some cost advantage or produce a product that is impossible to duplicate perfectly.
- Existing firms may make supernormal profits, but, if a new firm entered, this might reduce everyone's profits below the normal level. Thus a new firm will not enter

and supernormal profits will persist into the long run. An example would be a small town with two chemist shops. They may both make more than enough profit to persuade them to stay in business. But if a third set up (say midway between the other two), there would not be enough total sales to allow them all to earn even normal profit. This is a problem of indivisibilities. Given the overheads of a chemist shop, it is not possible to set up one small enough to take away just enough customers to leave the other two with normal profits.

- One of the biggest problems with the simple model outlined above is that it concentrates on price and output decisions. In practice, the profit-maximising firm under monopolistic competition will also need to decide the exact variety of product to produce, and how much to spend on advertising it. This will lead the firm to take part in non-price competition (which we examined in Chapter 8).

Pause for thought

Why will additional advertising lead to smaller and smaller increases in sales under monopolistic competition?

Comparing monopolistic competition with perfect competition and monopoly

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Comparison with perfect competition

Often, it is argued that monopolistic competition leads to a less efficient allocation of resources than perfect competition.

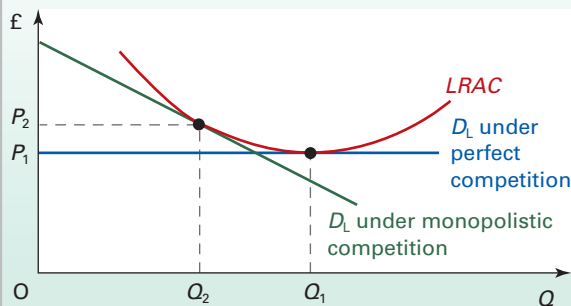
Figure 12.2 compares the long-run equilibrium positions for two firms. One firm is under perfect competition and thus faces a horizontal demand curve. It will produce an output of Q_1 at a price of P_1 . The other is under monopolistic competition and thus faces a downward-sloping demand curve. It will produce the lower output of Q_2 at the higher price of P_2 . A crucial assumption here is that a firm would have the *same* long-run average cost ($LRAC$) curve in both cases. Given this assumption, we can make the following two predictions about monopolistic competition:

- Less will be sold and at a higher price.
- Firms will not be producing at the least-cost point.

By producing more, firms would move to a lower point on their $LRAC$ curve. Thus firms under monopolistic competition are said to have *excess capacity*. In Figure 12.2, this excess capacity is shown as $Q_1 - Q_2$. In other words, monopolistic competition is typified by quite a large number of firms (e.g. petrol stations), all operating at less than optimum output, and thus being forced to charge a price above that which they could charge if they had a bigger turnover.

Figure 12.2

Long-run equilibrium of the firm under perfect and monopolistic competition

**Pause for thought**

Which would you rather have: five restaurants to choose from, each with very different menus and each having spare tables so that you could always guarantee getting one; or just two restaurants to choose from, charging a bit less but with less choice and making it necessary to book well in advance?

So how does this affect the consumer? Although the firm under monopolistic competition may charge a higher price than under perfect competition, the difference may

be very small. Although the firm's demand curve is downward sloping, it is still likely to be highly elastic due to the large number of substitutes. Furthermore, the consumer may benefit from monopolistic competition by having a greater variety of products to choose from. Each firm may satisfy some particular requirement of particular consumers.

Comparison with monopoly

When comparing monopolistic competition with monopoly, we find very similar arguments as we had when comparing perfect competition and monopoly.

On the one hand, freedom of entry for new firms and hence the lack of long-run supernormal profits under monopolistic competition are likely to help keep prices down for the consumer and encourage cost saving. On the other hand, monopolies are likely to achieve greater economies of scale and have more funds for investment and research and development.

Definition

Excess capacity (under monopolistic competition) In the long run, firms under monopolistic competition will produce at an output below that which minimises average cost per unit.

12.2 OLIGOPOLY

Oligopoly occurs when just a few firms share a large proportion of the industry between them. Some of the best-known companies are oligopolists, including Ford, Coca-Cola, Apple, EDF and Tesco. On *The Sloman Economics News Site*, you can search for many blogs written about different oligopolies and it is both useful and interesting to compare the outcomes as, despite all being oligopolies, there can be significant differences in the behaviour of firms.

One of the key differences between oligopolies is in the degree of product differentiation. The firms may produce a virtually identical product (e.g. metals, chemicals, sugar, petrol). In most cases, however, oligopolists produce highly differentiated products (e.g. cars, soap powder, soft drinks, electrical appliances). Much of the competition between such oligopolists is in terms of the marketing of their particular brand. Marketing practices may differ considerably from one industry to another.

The two key features of oligopoly

Despite the differences between oligopolies, there are two crucial features that distinguish an oligopoly from other market structures.

Barriers to entry

Unlike firms under monopolistic competition, there are various barriers to the entry of new firms. These are similar to those under monopoly (see pages 191–4). The size of the barriers, however, will vary from industry to industry. In some cases, entry is relatively easy, whereas in others it is virtually impossible, perhaps due to patent protection or prohibitive research and development costs.

Interdependence of the firms

With only a few firms under oligopoly, each firm will need to take account of the behaviour of the others when making its own decisions. This means that they are mutually dependent: they are *interdependent*. Each firm is affected by its

KI 1
p11**Definition**

Interdependence (under oligopoly) This is one of the two key features of oligopoly. Each firm is affected by its rivals' decisions and its decisions will affect its rivals. Firms recognise this interdependence and take it into account when making decisions.

rivals' actions. If a firm changes the price or specification of its product, for example, or the amount of its advertising, the sales of its rivals will be affected.

The rivals may then respond by changing their price, specification or advertising. No firm can therefore afford to ignore the actions and reactions of other firms in the industry and it is this feature that differentiates oligopolies from the other market structures.

**KEY
IDEA
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People often think and behave strategically. How you think others will respond to your actions is likely to influence your own behaviour. Firms, for example, when considering a price or product change will often take into account the likely reactions of their rivals.

It is impossible, therefore, to predict the effect on a firm's sales of, say, a change in its price without first making some assumption about the reactions of other firms. Different assumptions yield different predictions about how firms will respond to a given market situation and thus there is no one single theory of oligopoly.

Competition and collusion

The interdependence of oligopolists means firms are pulled in two different directions: to compete and to collude.

Firms will want to maximise their *share* of industry profits. Having analysed its rivals' strategies, a firm may decide to *compete* with its rivals, perhaps by cutting prices or undertaking advertising with the aim of increasing sales. However, if all firms cut prices, each unit sold now earns less revenue; if all firms increase advertising, average costs will rise. Either way, profits are likely to fall.

Thus, the firm may conclude that, rather than competing with its rivals, *collusion* will be a more profitable strategy. If it can come to agreements with the other firms on price, output, product design, etc., the firms may jointly be able to maximise industry profits. They can then split these maximum profits between them. Of course, this may be bad for the consumer and most countries have competition laws that try to prevent open collusion (as we shall see in section 21.1).

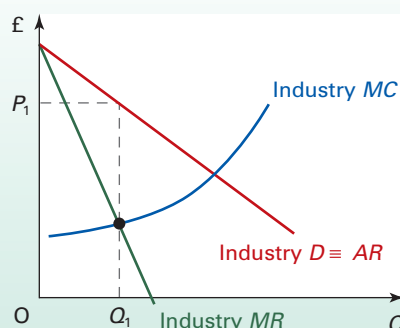
Sometimes, if they can get away with it, firms will collude; sometimes they will not. The following sections examine first *collusive oligopoly*, where we consider both formal agreements and tacit collusion, and then *non-collusive oligopoly*.

Collusive oligopoly

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When firms under oligopoly engage in collusion, they may agree on prices, market share, advertising expenditure, etc. Such collusion reduces the uncertainty they face. It reduces the fear of engaging in competitive price cutting or retaliatory advertising, both of which could reduce total industry profits and probably each individual firm's profit.

Figure 12.3 Profit-maximising cartel



Cartels

A formal collusive agreement is called a *cartel*. The cartel will maximise profits by acting like a monopolist, with the members behaving as if they were a single firm. This is illustrated in Figure 12.3.

The total market demand curve is shown with the corresponding market MR curve. The cartel's MC curve is the *horizontal* sum of the MC curves of its members (since we are adding the *output* of each of the cartel members at each level of marginal cost). Profits are maximised at Q_1 where $MC = MR$. The cartel must therefore set a price of P_1 (at which Q_1 will be demanded).

Having agreed on the cartel price, the members may then compete against each other using *non-price competition*, to gain as big a share of resulting sales (Q_1) as they can.

Alternatively, the cartel members may somehow agree to divide the market between them. Each member would be given a *quota*. These quotas could be the same for every firm or they might be allocated according to the current market share of the firm. Whatever the method of allocation, the sum of all the quotas must add up to Q_1 . If the quotas

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p 19**

Definitions

Collusive oligopoly When oligopolists agree (formally or informally) to limit competition between themselves. They may set output quotas, fix prices, limit product promotion or development, or agree not to 'poach' each other's markets.

Non-collusive oligopoly When oligopolists have no agreement between themselves – formal, informal or tacit.

Cartel A formal collusive agreement.

Quota (set by a cartel) The output that a given member of a cartel is allowed to produce (production quota) or sell (sales quota).

exceeded Q_1 , either there would be output unsold if price remained fixed at P_1 or the price would fall to clear the market.

The most famous example of a cartel is OPEC, which was set up in 1960 by the five major oil-exporting countries and is discussed in more detail in Box 12.1.

Where open collusion is illegal, firms may simply break the law or find ways to get round it. Alternatively, firms may stay within the law, but still *tacitly* collude by watching each other's prices and keeping theirs similar. Firms may tacitly 'agree' to avoid price wars or aggressive advertising campaigns.

Pause for thought

If this 'fair' solution were adopted, what effect would it have on the industry MC curve in Figure 12.3?

Tacit collusion

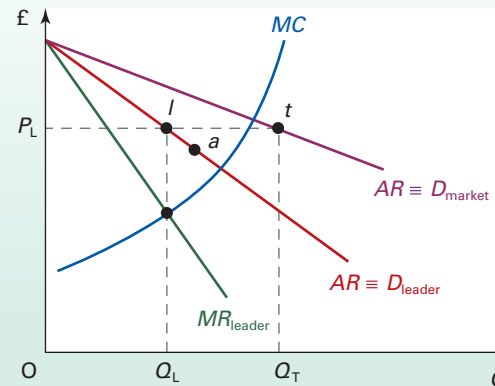
One form of **tacit collusion** is where firms keep to the price that is set by an established leader. The leader may be the largest firm: the firm that dominates the industry. This is known as **dominant firm price leadership**. Alternatively, the price leader may simply be the one that has proved to be the most reliable to follow: the one that is the best barometer of market conditions. This is known as **barometric firm price leadership**. Let us examine each of these two types of price leadership in turn.

Dominant firm price leadership. This is a 'sequential game', where one firm (the leader) moves first and then the followers, having observed the leader's choice of price, move second. We will discuss sequential games in more detail in section 12.3. Here we are interested in determining how the leader sets the price. This depends on the assumptions it makes about its rivals' reactions to its price changes. If it assumes that rivals will simply follow it by making exactly the same percentage price changes up or down, then a simple model can be constructed. This is illustrated in Figure 12.4. The leader assumes that it will maintain a constant market share (say 50 per cent).

The leader will maximise profits where its marginal revenue is equal to its marginal cost. It knows its current position on its demand curve (say, point *a*) as it knows its current price and how much output it is selling. It then estimates how responsive its demand will be to industry-wide price changes and thus constructs its demand and MR curves on that basis. It then chooses to produce Q_L at a price of P_L : at point *l* on its demand curve (where $MC = MR$). Other firms then follow that price. Total market demand is Q_T , with followers supplying that portion of the market not supplied by the leader: $Q_T - Q_L$.

There is one problem with this model. That is the assumption that the followers will want to maintain a constant market share. It is possible that, if the leader raises its price,

Figure 12.4 A price leader aiming to maximise profits for a given market share



the followers may want to supply more, given that the new price ($= MR$ for a price-taking follower) could be above their marginal cost. On the other hand, the followers may decide merely to maintain their market share for fear of invoking retaliation from the leader, in the form of price cuts or an aggressive advertising campaign.

Barometric firm price leadership. A similar exercise can be conducted by a barometric firm. Although the firm is not dominating the industry, its price will be followed by the others. It merely tries to estimate its demand and MR curves – assuming, again, a constant market share – and then produces where $MR = MC$ and sets price accordingly.

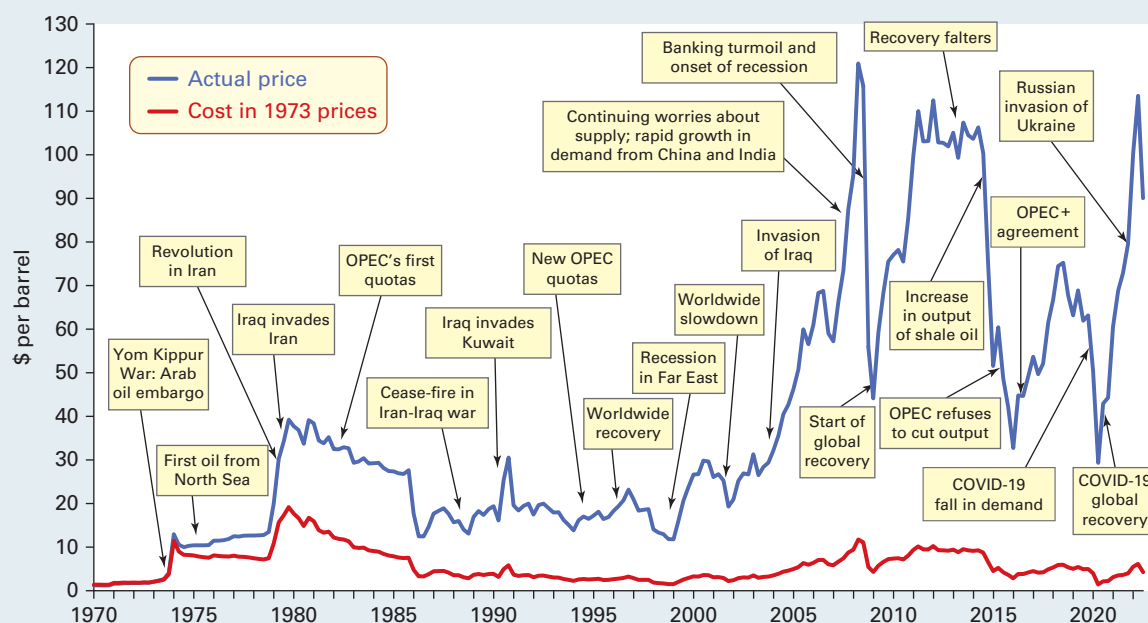
In practice, which firm is taken as the barometer may change frequently. Whether we are talking about oil companies, car producers or banks, any firm may take the initiative in raising prices. If the other firms are merely waiting for someone to take the lead – say, because costs have risen – they will all quickly follow suit. For example, if one of the bigger building societies or banks raises its mortgage rates by 1 per cent, this is likely to stimulate the others to follow suit.

Definitions

Tacit collusion When oligopolists follow unwritten 'rules' of collusive behaviour, such as price leadership. They will take care not to engage in price cutting, excessive advertising or other forms of competition.

Dominant firm price leadership When firms (the followers) choose the same price as that set by a dominant firm in the industry (the leader).

Barometric firm price leadership Where the price leader is the one whose prices are believed to reflect market conditions in the most satisfactory way.

BOX 12.1 OPEC**The history of the world's most famous cartel***Oil prices (Brent crude, quarterly average)*

Sources: Nominal oil price data from *World Commodity Price Data (The Pink Sheet)*, *Commodity Markets (World Bank)*; Price Index from *Data Extracts (OECD)*

OPEC is probably the best known of all cartels. Set up in 1960 by the five major oil-exporting countries (Saudi Arabia, Iran, Iraq, Kuwait and Venezuela), it currently has 13 members, including Nigeria, Angola, Libya and the United Arab Emirates.

OPEC's main objective is to co-ordinate the supply of oil by its members so as to support an oil price that gives a steady income to producers and a good return on capital. It also aims to ensure a regular supply to consumers.

The years leading up to 1960 saw the oil-producing countries increasingly in conflict with the international oil companies, which extracted oil under 'concessionary agreement'. Under this scheme, oil companies were given the right to extract oil in return for royalties. This meant that the oil-producing countries had little say over output and price levels.

The early years

Despite the formation of OPEC in 1960, it was not until 1973 that control of oil production was effectively transferred from the oil companies to the oil countries, with OPEC deciding how much oil to produce and thereby determining its oil revenue.

OPEC's pricing policy over the 1970s consisted of setting a market price for Saudi Arabian crude (the market leader), and leaving other OPEC members to set their prices in line with this: a form of dominant 'firm' price leadership (see page 207). As demand for oil was both buoyant and inelastic, OPEC could raise prices, which allowed revenue growth.

In 1973/4, after the Arab–Israeli war, OPEC raised the price of oil from around \$3 per barrel to over \$12. The price was kept at roughly this level until 1979, but with the Iranian Revolution then causing oil output to fall, prices rose from around \$15 to \$40 per barrel. This, together with the recession of the early 1980s, which can partly be attributed to governments' response to the rising oil prices, caused demand to fall.

Quotas

Faced by declining demand, OPEC after 1982 agreed to limit output and allocate production quotas in an attempt to keep the price up. However, the cartel was beginning to break down, with the recession reducing demand for oil, growing output from non-OPEC members and some OPEC members exceeding their quotas. With a glut of oil, OPEC could no longer maintain the price.

The world economy boomed in the late 1980s, pushing up the demand for oil. Then in 1990 Iraq invaded Kuwait and the first Gulf War ensued. Supplies from Kuwait and Iraq were cut off, reducing the supply of oil and there was a sharp rise in its price. But with the ending of the war and the early 1990s recession, the price rapidly fell again and only recovered slowly as the world economy started expanding once more.

On the demand side, the development of energy-saving technology plus increases in fuel taxes led to a relatively slow growth in consumption. On the supply side, the growing proportion of output supplied by non-OPEC members, plus the adoption in 1994 of a relatively high OPEC production ceiling