

A2 Micro Business Economics Diagrams

Advice on drawing diagrams in the exam

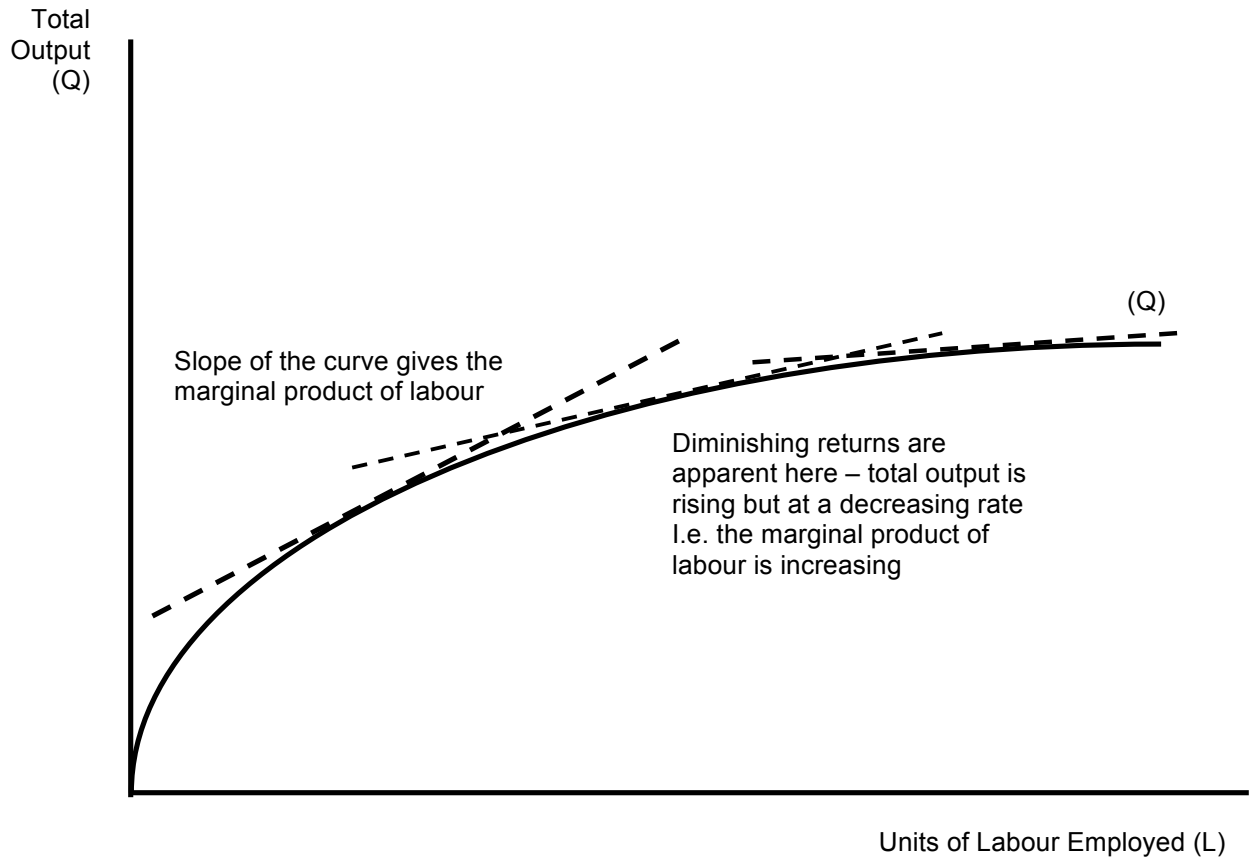
- The right size for a diagram is $\frac{1}{2}$ of a side of A4 – don't make them too small – if needed, move onto a new side of paper rather than squeezing a diagram in at the bottom of a page
- Avoid wrapping text around the diagram – leave a line between the text and your page
- Avoid directional arrows they clutter up the diagram and add little to it
- Remember to label each curve clearly so that it is clear which curves are shifting
- Remember to label carefully and accurately both the x and the y axis
- Draw diagrams to the right technical level; don't resort to simple supply and demand analysis when more complex cost and revenue curves are required (remember that this is A2!)

Diagrams included in this revision document

1. The law of diminishing returns
2. Fixed and variable costs in the short run
3. Changes in variable costs and the effect on the profit maximising price, output and profit
4. The long run minimum efficient scale
5. Economies and diseconomies of scale in long run production and the effect on profits
6. A natural monopoly and economic efficiency
7. Understanding average, marginal and total revenue
8. Different objectives of businesses – effect on price, output and profit
9. The shut down price for a business in the short run
10. Short and long run in perfect competition and comparison with pure monopoly
11. Entry barriers for a monopolist and economies of scale with a monopoly
12. Price discrimination (i) peak and off-peak pricing (ii) 3rd degree discrimination
13. Oligopoly – the kinked demand curve model
14. Game theory – price collusion and the economics of a cartel
15. Elasticity of demand and pricing power for a business in imperfect competition

The short run is a period of time where at least one factor of production is assumed to be in fixed supply i.e. it cannot be changed.

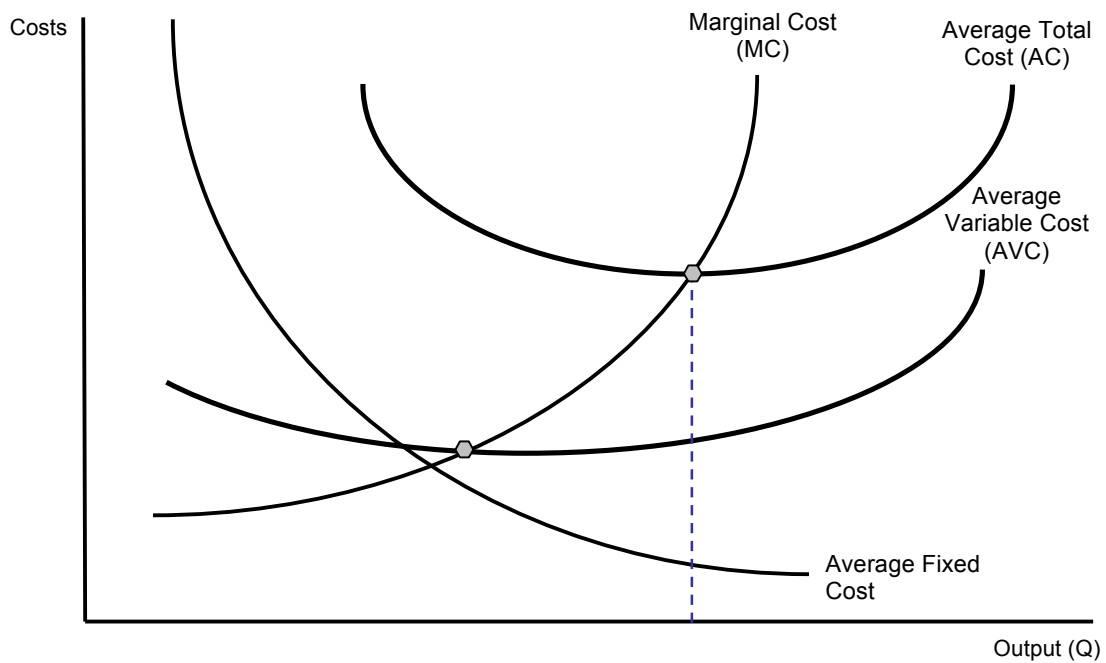
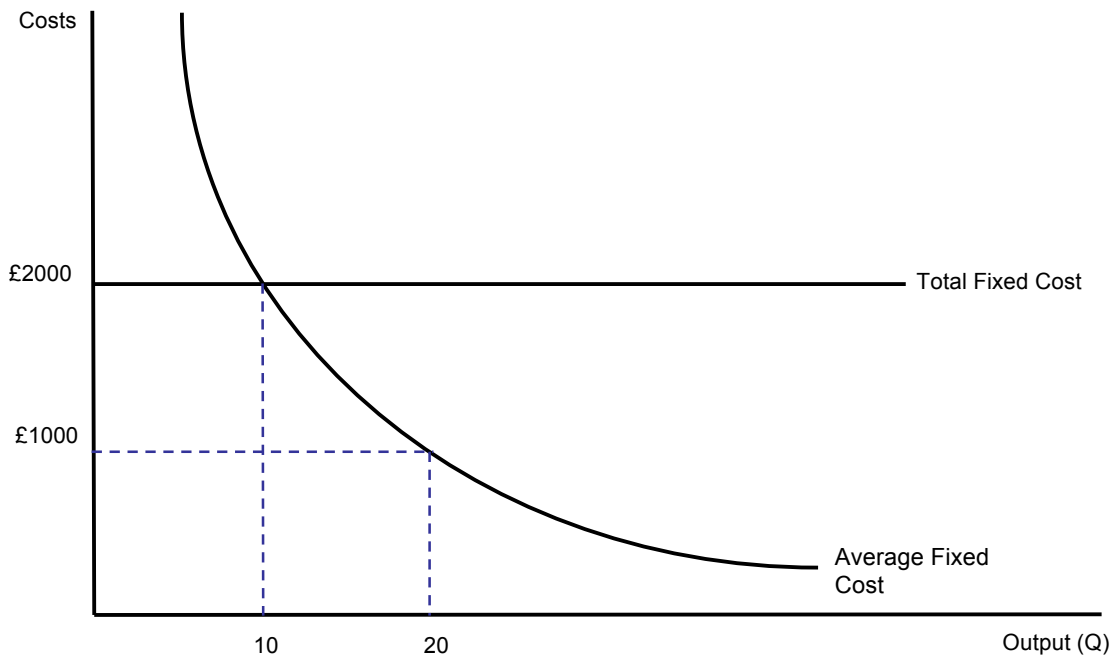
In the short run, the law of diminishing returns states that as we add more units of a variable input (i.e. labour or raw materials) to fixed amounts of land and capital, the change in total output will at first rise and then fall.



In many industries as a business expands in the long run, it is more likely to experience increasing returns leading to lower unit costs of production.

Fixed and variable costs in the short run

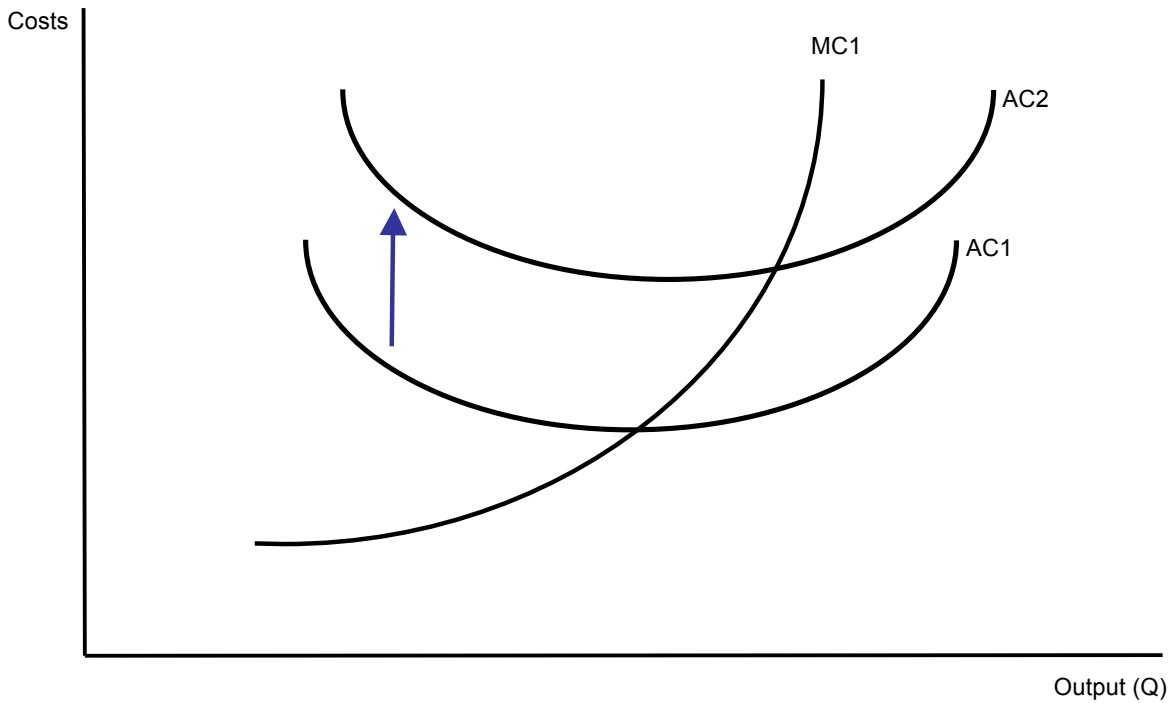
Fixed costs (FC) are independent of output and must be paid out even if the production stops. Capital-intensive industries with a high ratio of fixed to variable costs offer scope for economies of scale. $AFC = \text{Fixed Costs (FC)} / \text{Output (Q)}$.



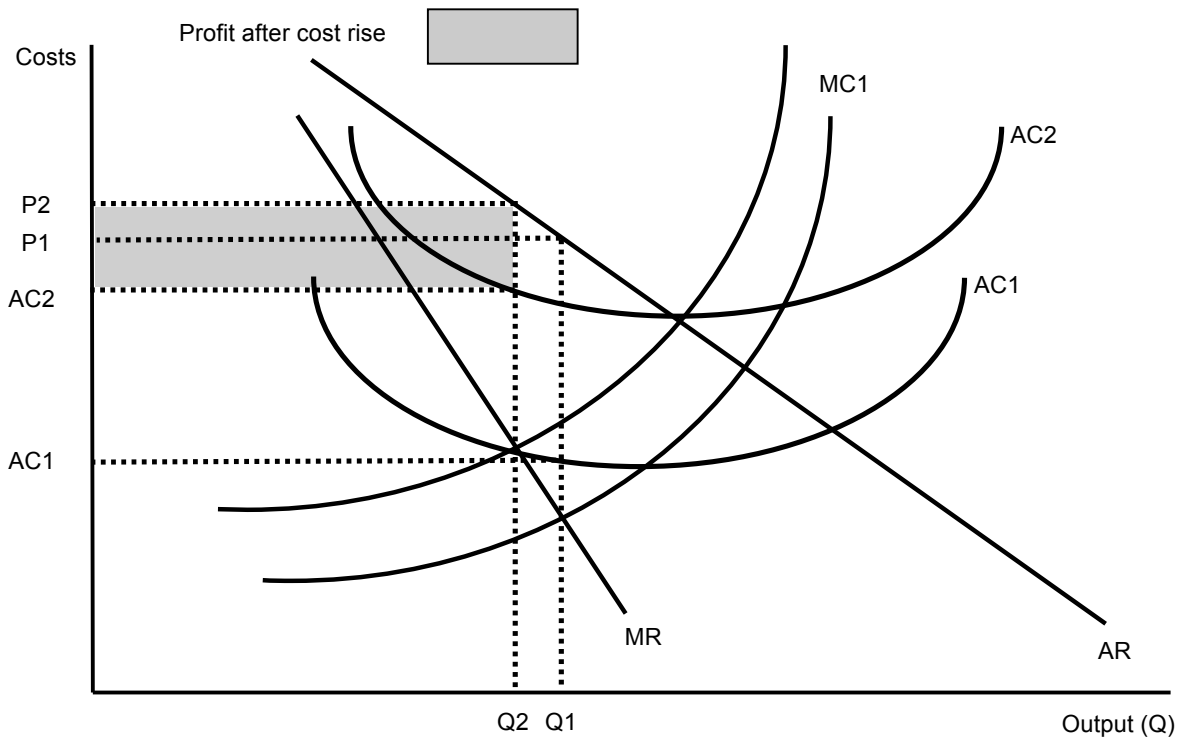
- These are the “traditional” short run cost curves
- Marginal cost cuts both AVC and ATC at the minimum point of each
- Your diagrams need to be accurate so it is worth practising them as often as possible to improve your accuracy

Changes in variable costs and the effect on the profit maximising price; output and profit

Important: A rise in fixed costs has no effect on marginal cost – it simply causes an upward shift in the average cost curve. But a rise in variable cost causes a shift in both MC and AC

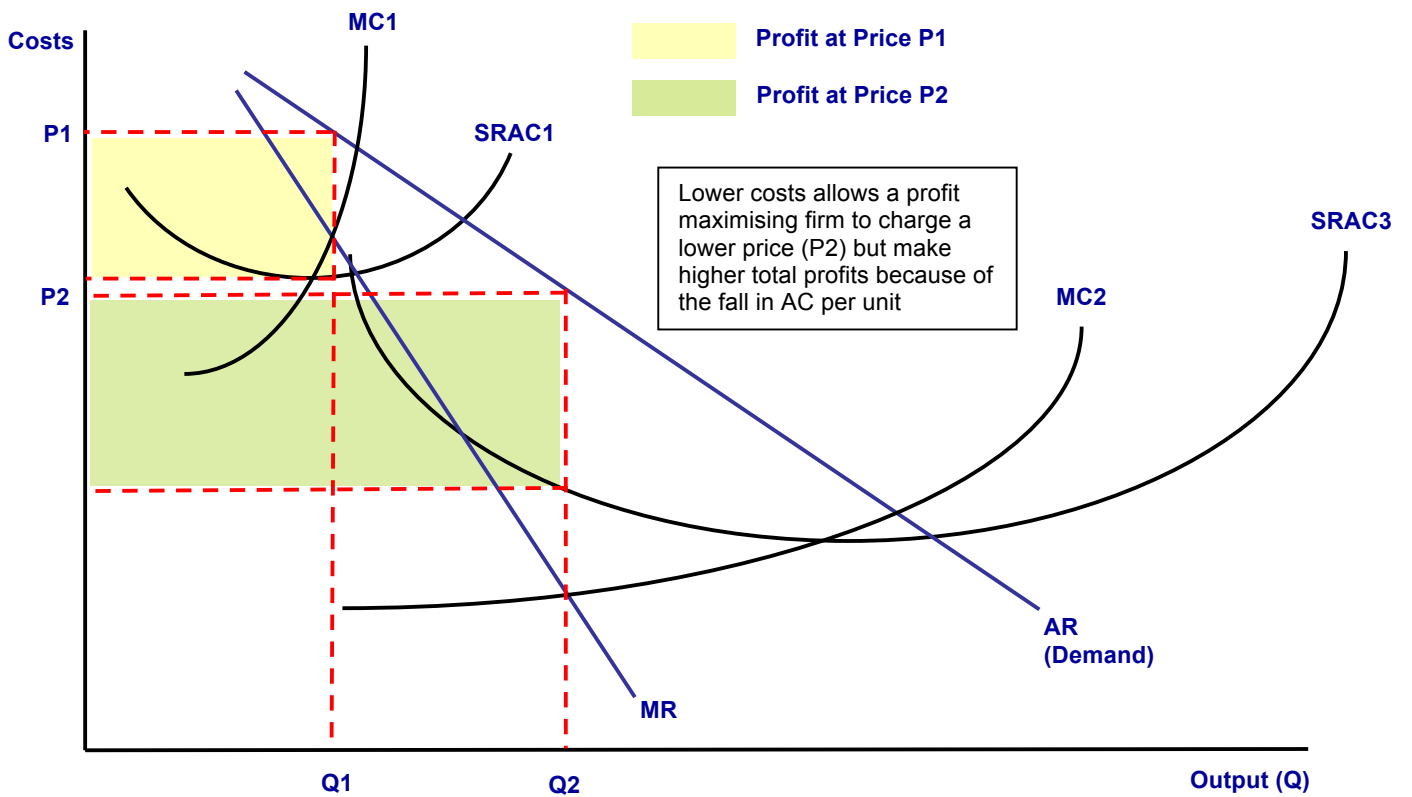
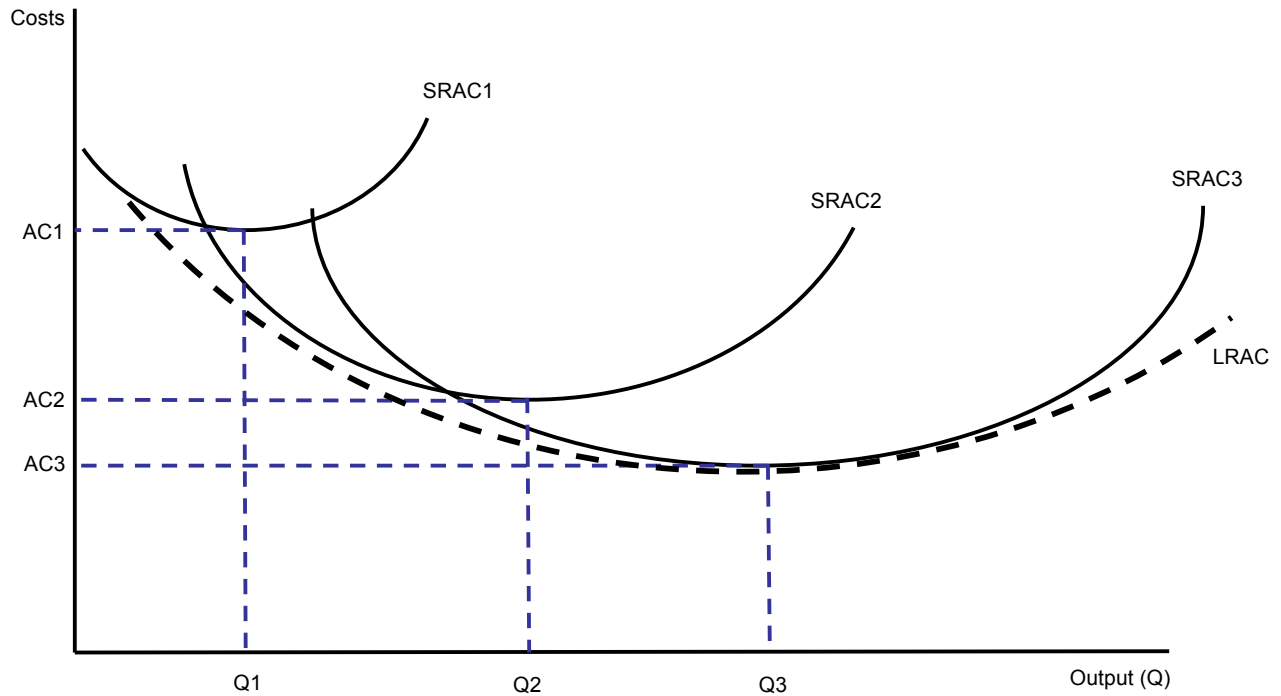


Higher variable costs – the effect on equilibrium prices and profits (ceteris paribus)

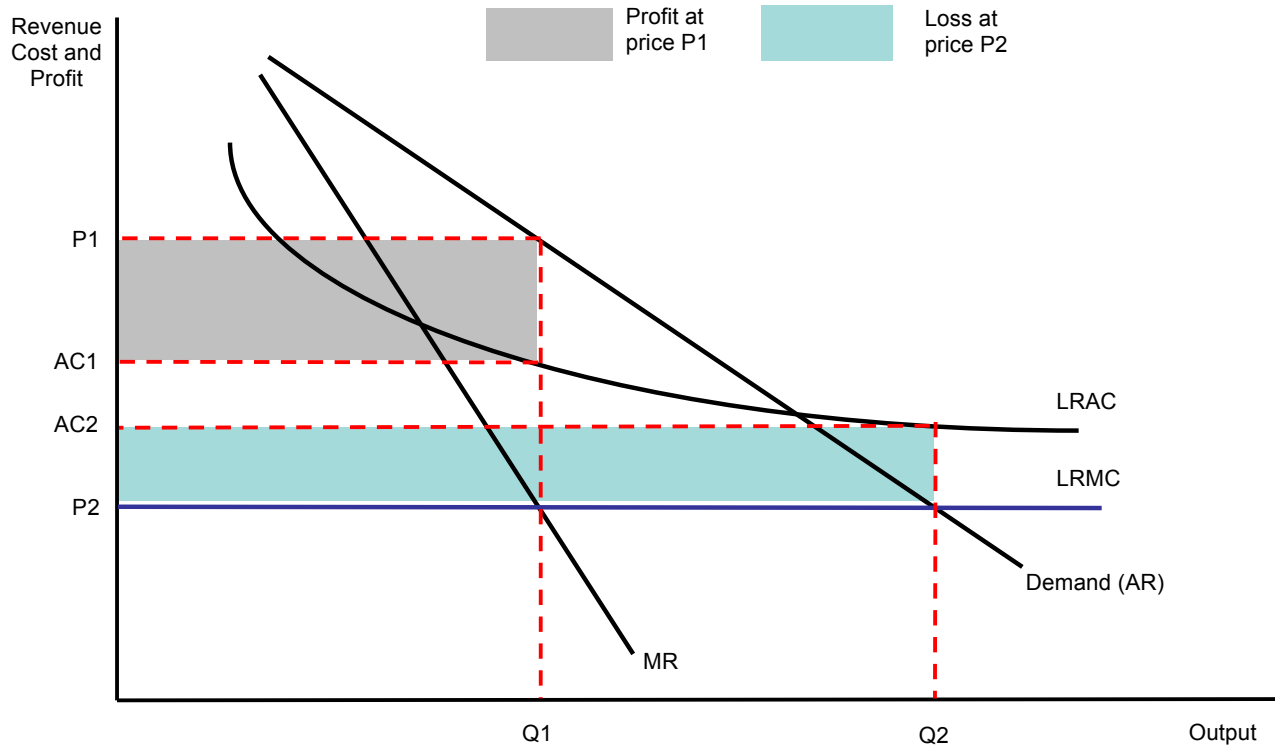


Economies and dis-economies of scale in long run and the effect on profits

Deriving the long run average cost curve – the envelope of a series of short run average cost curves



Natural monopoly and economic efficiency



A natural monopoly – splitting infrastructure from the final delivery of services

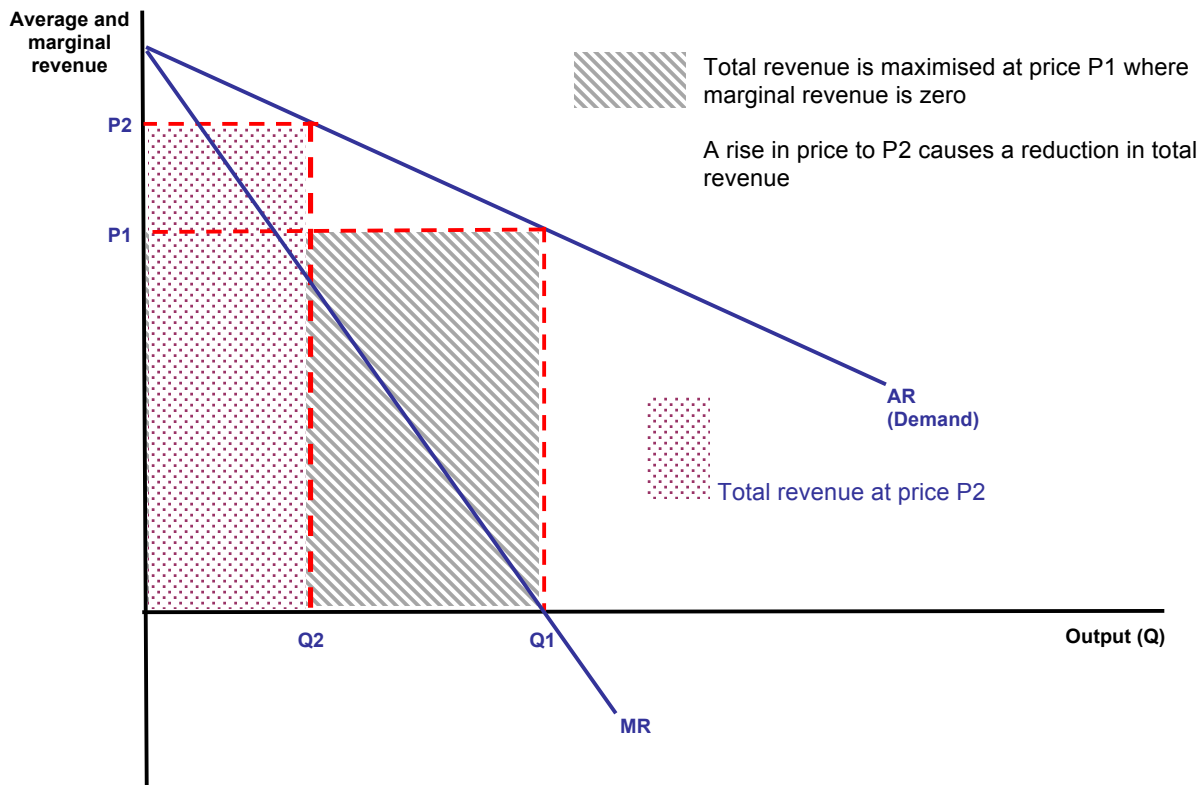
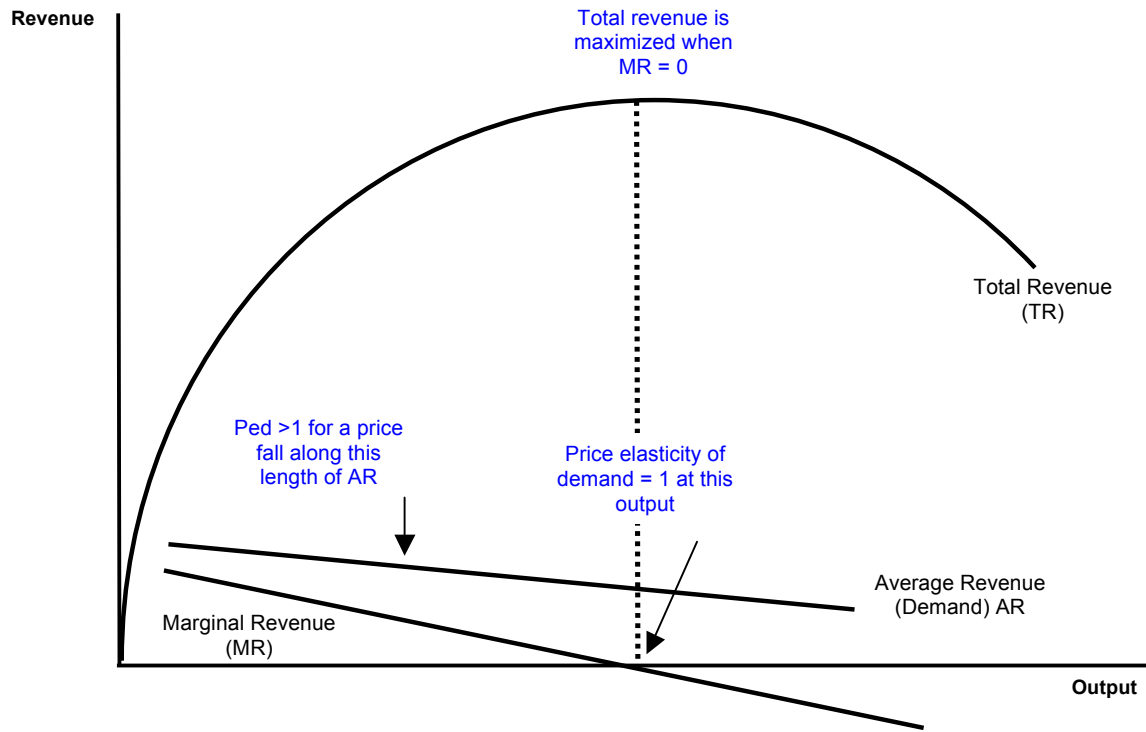
A natural monopoly occurs in an industry where LRAC falls over a wide range of output levels such that there may be room only for one supplier to fully exploit all of the internal economies of scale, reach the minimum efficient scale and therefore achieve productive efficiency.

The major utilities such as gas, electricity and water are often put forward as examples of industries with strong "natural tendencies" towards being a natural monopoly in part because of the huge fixed costs of building and maintaining nationwide networks / infrastructures of cables and pipes.

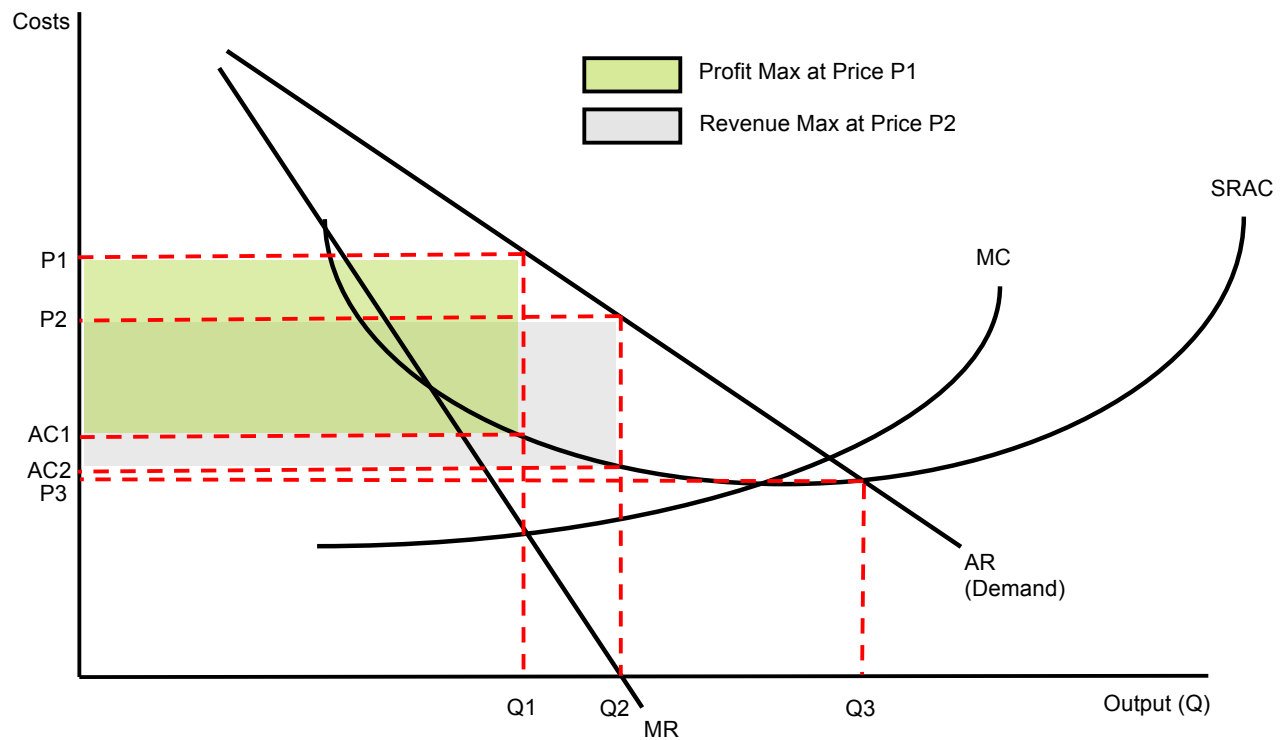
In fact we can make an important distinction between the supply and distribution of services such as gas and electricity and web services.

Often a monopolistic firm is in charge of maintaining a network but a regulator will seek to inject competition into the market by allowing new firms to come in a use the existing network and compete for customer contracts in the delivery of services. Good examples include the liberalisation of postal services and also the decision by OFCOM to force British Telecom to open up its networks to household and business customers so that rival firms can compete for the market demand in telecommunication services.

Understanding average, marginal and total revenue



Different objectives of businesses – effect on price, output and profit



It is now widely accepted that modern businesses depart frequently from pure profit maximisation pricing strategies as part of competition within markets. The objectives and strategies of firms will vary with market conditions and with the aims of the different stakeholders that are part of the decision-making process in modern corporations.

The normal profit maximising output is at Q1 (where marginal revenue = marginal cost)

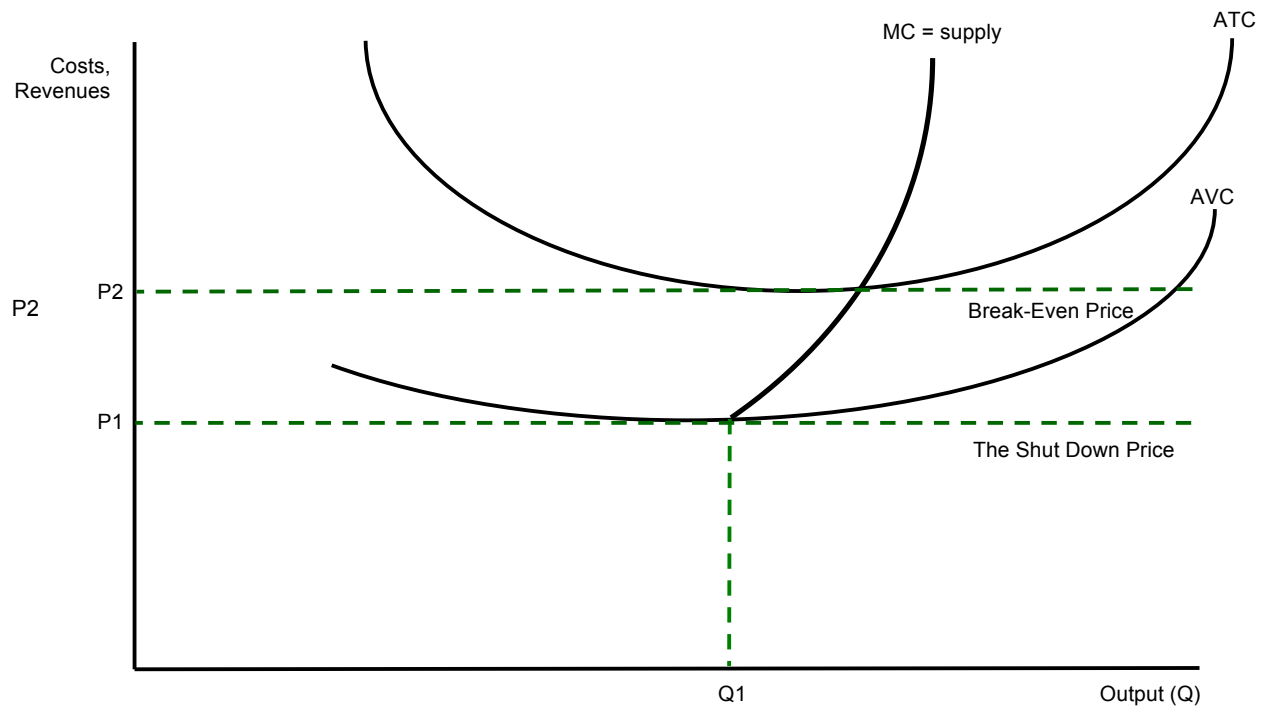
Total revenue is maximised at output Q2 where marginal revenue is zero. This gives a lower level of total profits, although supernormal profits are still being earned.

If shareholders insist on the business achieving a normal rate of profit as a minimum then the managers of a business have the discretion to vary price anywhere above P3

At any output beyond Q3 (where average revenue and average cost intersect) losses are made (i.e. sub-normal profits).

Be aware of the reasons for firms moving away from profit maximisation and also the effects of different price strategies on consumer and producer welfare and economic efficiency.

The shut down price for a business in the short run



The shut down price for a business in the short run

The theory of the firm assumes that a business needs to make at least normal profit in the long run to justify remaining in an industry but this is not a strict requirement in the short term.

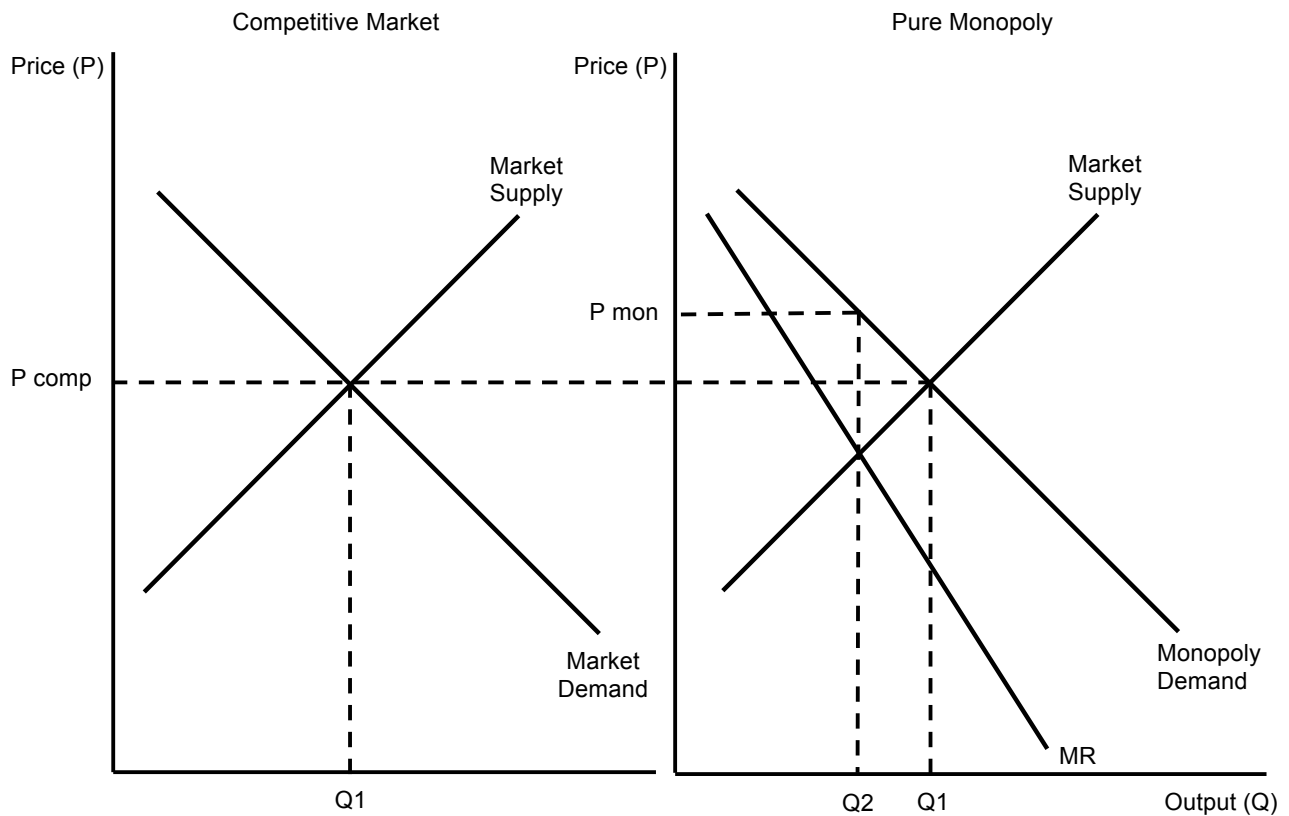
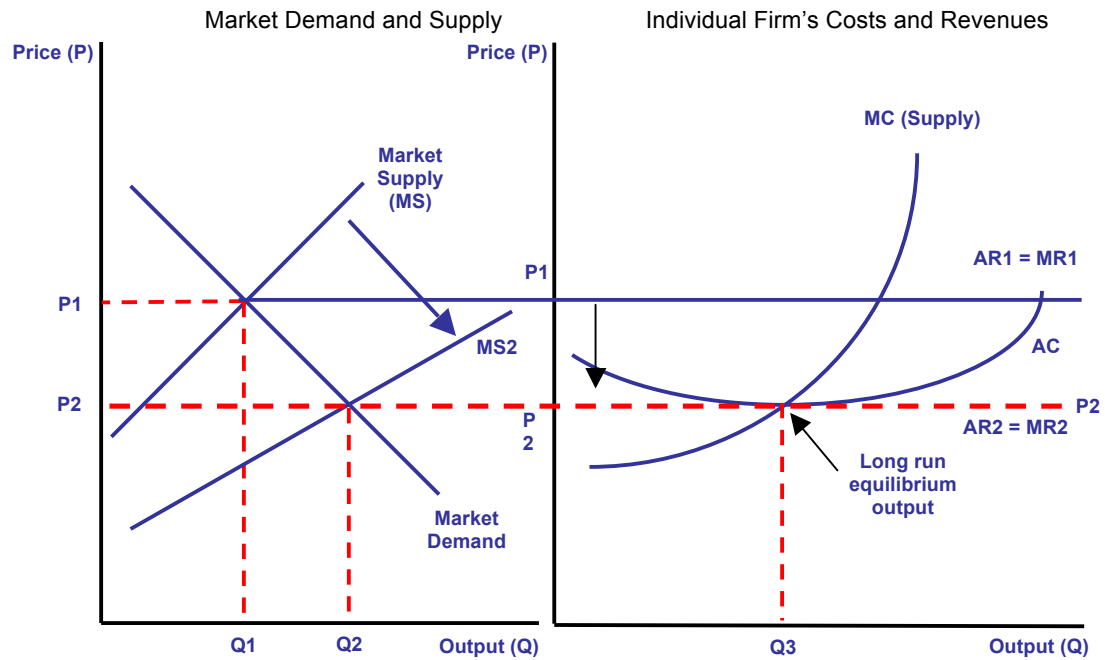
In the short run the firm will continue to produce as long as **total revenue covers total variable costs** or put another way, so long as **price per unit > or equal to average variable cost (AR = AVC)**.

The reason for this is as follows. A business's fixed costs must be paid regardless of the level of output. If we make an assumption that these costs are sunk costs (i.e. they cannot be covered if the firm shuts down) then the loss per unit would be greater if the firm were to shut down, provided variable costs are covered.

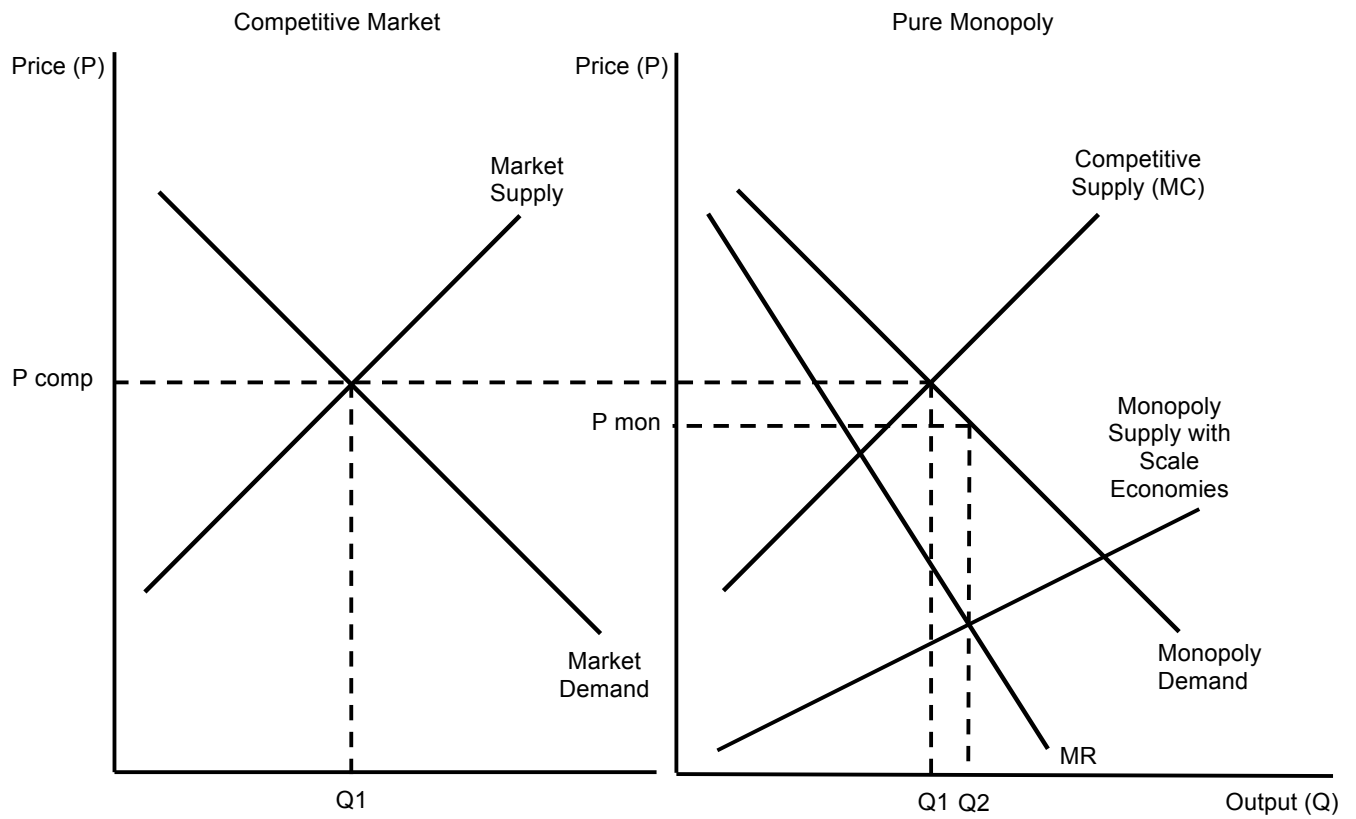
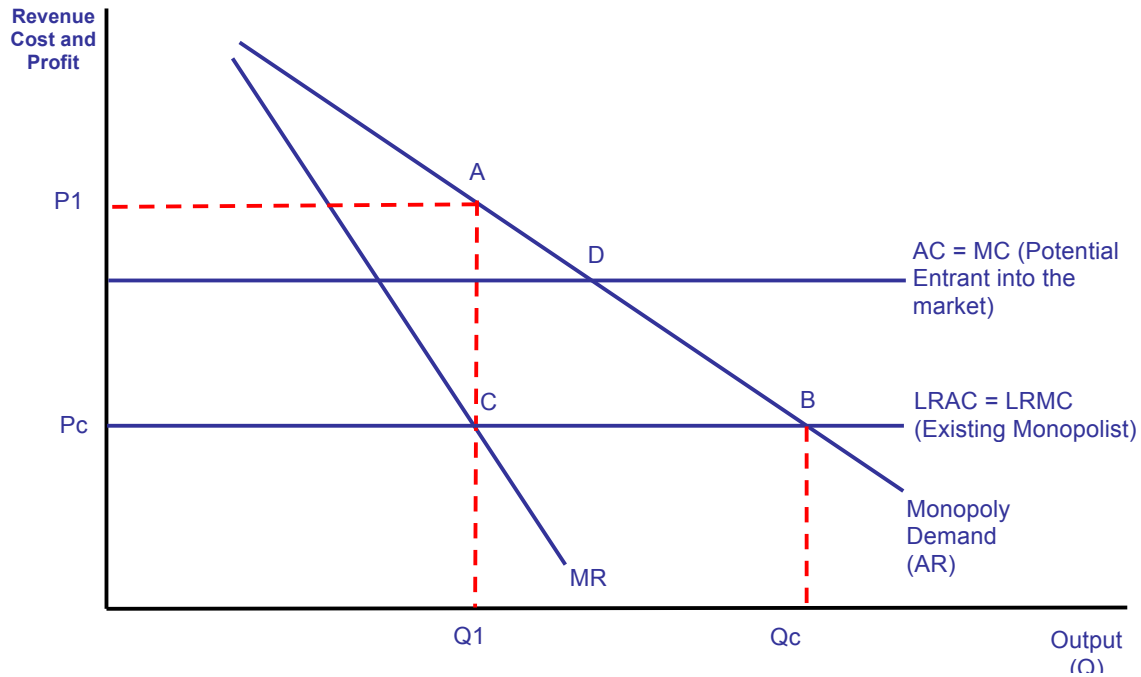
In the short run, the supply curve for a competitive firm is the marginal cost curve above average variable cost.

Short and long run in perfect competition

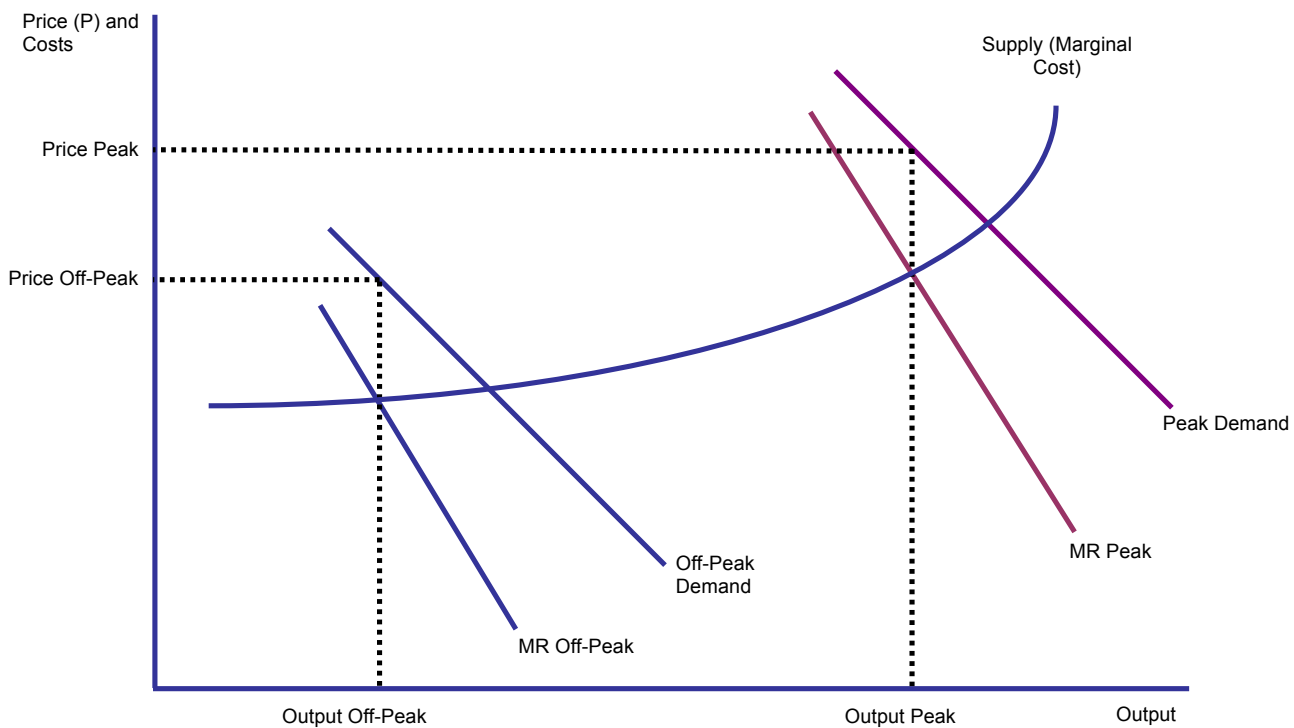
No barriers to entry and super normal profits encourage the entry of new firms shifting market supply & price downward until price falls back to P_2 . Normal profits are restored.



Entry barriers for a monopolist and monopoly with economies of scale

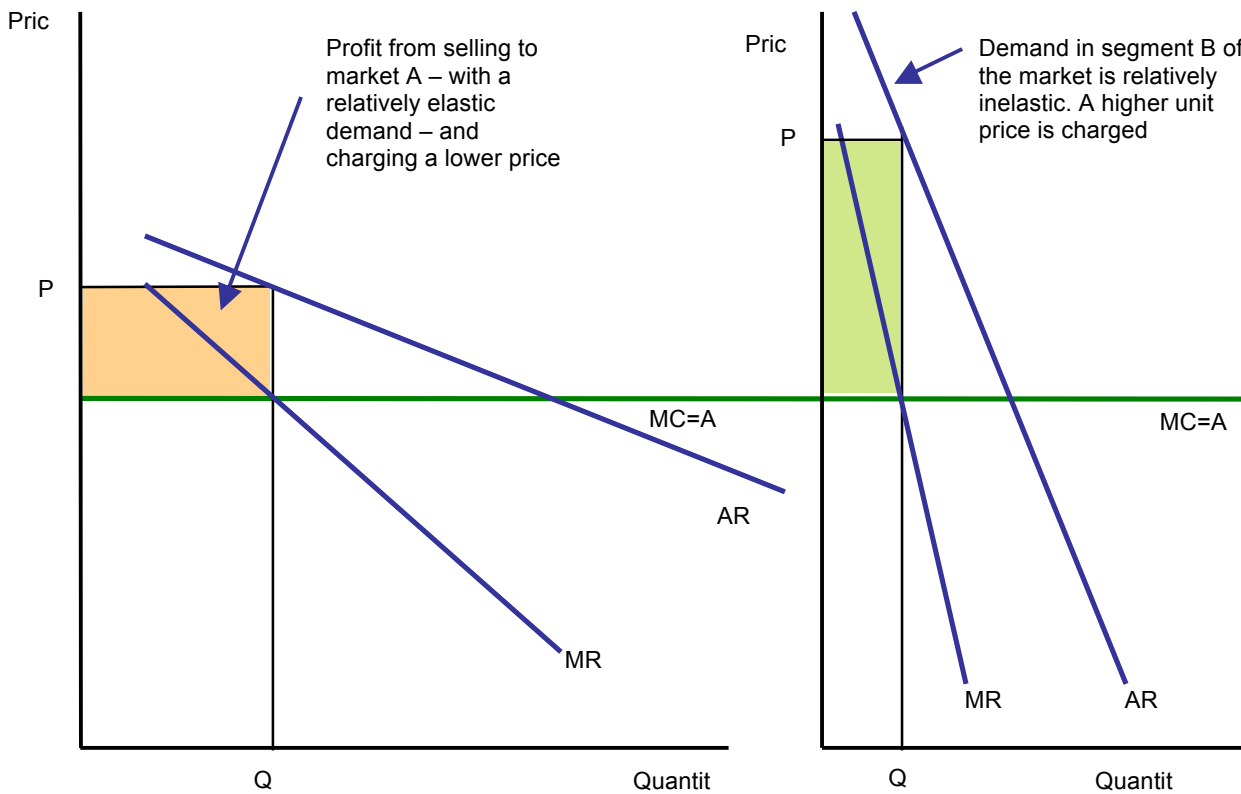


Price discrimination (i) peak and off-peak pricing (ii) 3rd degree discrimination

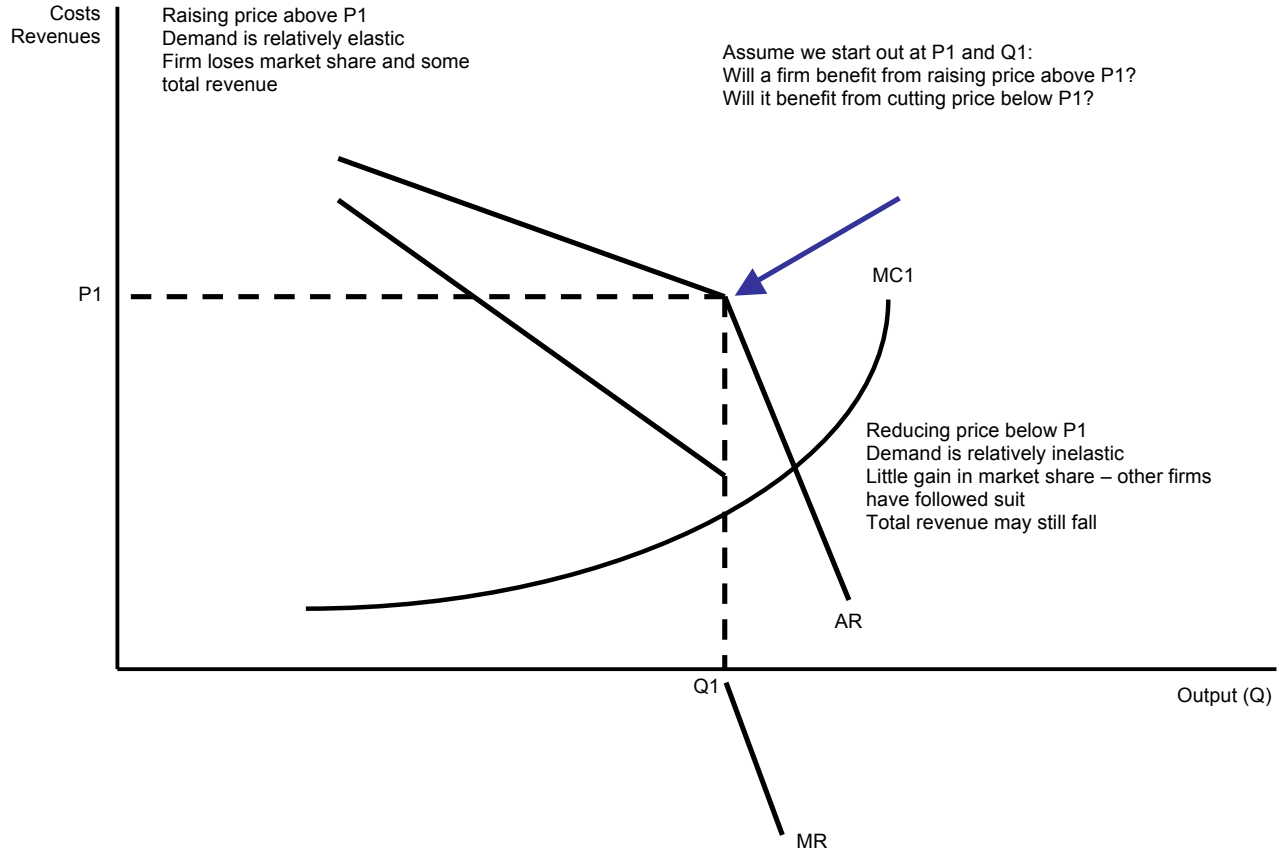


Market

Market



Oligopoly – the kinked demand curve model



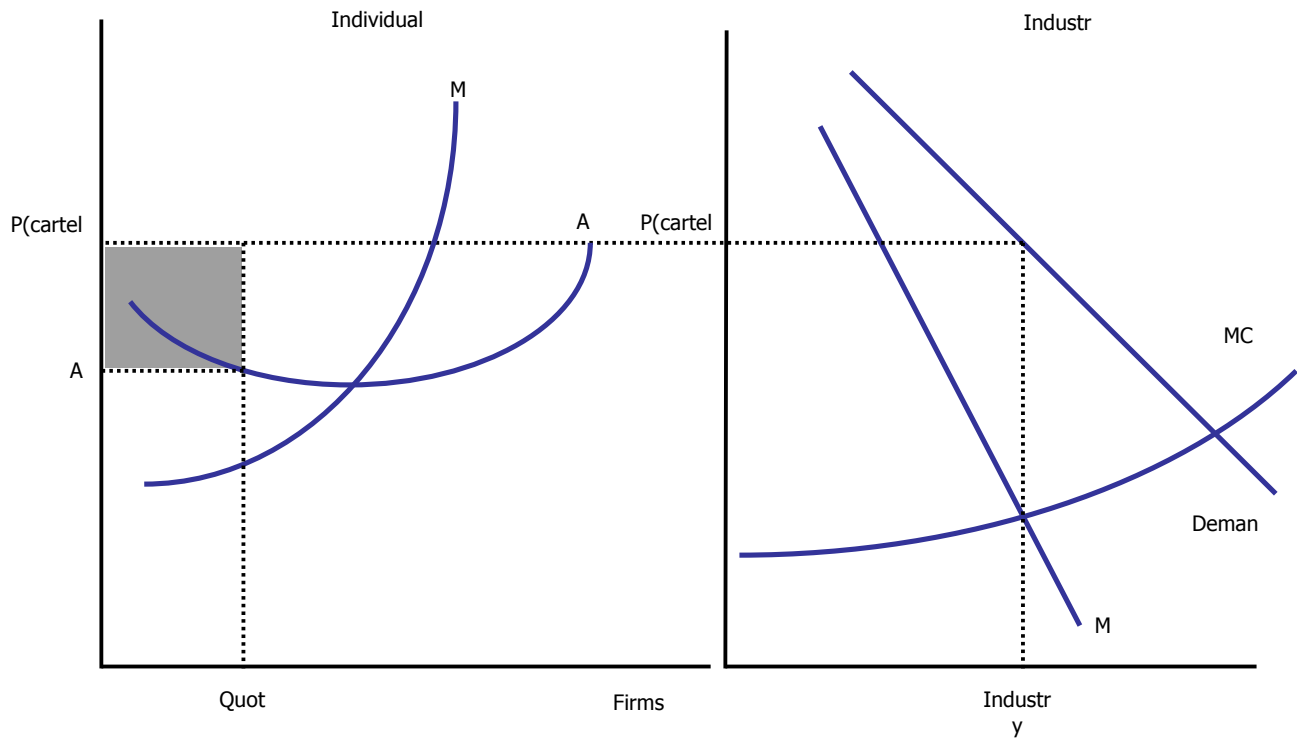
An oligopoly is a market dominated by a few producers, each of which has control over the market. It is an industry where there is a high level of market concentration. However, **oligopoly is best defined by the conduct (or behaviour) of firms within a market rather than its market structure.**

The kinked demand curve model assumes that a business might face a **dual demand curve** for its product based on the **likely reactions** of other firms in the market to a change in its price or another variable. The common assumption is that firms in an oligopoly are looking to **protect and maintain market share** and that rival firms are unlikely to match another's price increase but may match a price fall. I.e. rival firms within an oligopoly react asymmetrically to a change in the price of another firm.

The kinked demand curve model therefore makes a prediction that a business might reach a stable profit-maximizing equilibrium at price P_1 and output Q_1 and have little incentive to alter prices. Even a shift in the marginal cost curve (MC1) in the diagram above might not be enough to change the profit maximizing equilibrium.

The kinked demand curve model predicts periods of **relative price stability** under an oligopoly with **businesses focusing on non-price competition** as a means of reinforcing their market position and increasing their supernormal profits.

Game theory – price collusion and the economics of a cartel



Collusion is a desire to achieve joint-profit maximization within a market or prevent price and revenue instability in an industry.

Price fixing represents an attempt by suppliers to control supply and fix price at a level close to the level we would expect from a monopoly.

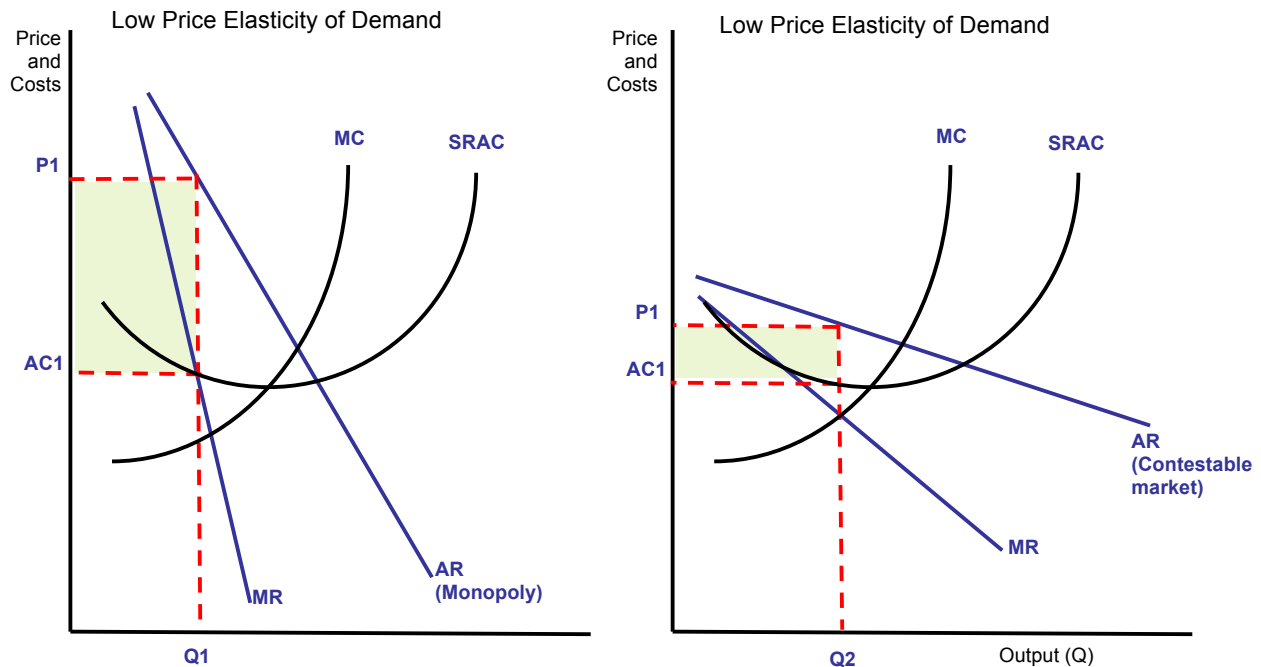
To fix prices, the producers in the market must be able to exert control over market supply. In the diagram below a producer cartel is assumed to fix the cartel price at output Q_m and price P_m . The distribution of the cartel output may be allocated on the basis of an output quota system or another process of negotiation.

Although the cartel as a whole is maximizing profits, the individual firm's output quota is unlikely to be at their profit maximizing point. For any one firm, within the cartel, expanding output and selling at a price that slightly undercuts the cartel price can achieve extra profits. Unfortunately if one firm does this, it is in each firm's interests to do exactly the same. If all firms break the terms of their cartel agreement, the result will be an excess supply in the market and a sharp fall in the price. Under these circumstances, a cartel agreement might break down.

Collusive behaviour is often predicted by game theory

Game theory is concerned with predicting the outcome of games of strategy in which the participants (for example two or more businesses competing in a market) have incomplete information about the others' intentions. Collusive behaviour reduces some of the uncertainty that is characteristic of oligopolistic markets.

Elasticity of demand and pricing power for a business in imperfect competition



The importance of price elasticity of demand in theory of the firm

Price elasticity of demand is a concept that was introduced at AS level. Horizontal synopticity requires you to apply the concept in theory of the firm diagrams. A good example of when this can be done is on questions on contestable markets

Highly contestable markets

Baumol defined contestable markets as existing where “an entrant has access to all production techniques available to the incumbents, is not prohibited from wooing the incumbent’s customers, and entry decisions can be reversed without cost.”

For a contestable market to exist there must be low barriers to entry and exit so that there is always the potential for new suppliers to come into a market to provide fresh competition to existing suppliers. For a perfectly contestable market, entry into and exit out of the market must be costless.

When a market is contestable there are likely to be a large number of competing suppliers; the cross-price elasticity of demand will be high because of strong substitution effects when relative prices in a market change. Hence we can draw the average revenue curve to be price elastic.

This reduces the potential for a business to charge a price that is well above the marginal cost of production. Profit margins are lower, output is higher and consumer welfare is great than it would be with a monopolist exploiting an inelastic demand curve (see left hand diagram).