Edexcel Economics (A) A-level

Theme 3: Business Behaviour and the Labour Market

3.3 Revenues, Costs and Profits

Detailed Notes

3.3.1 Revenue

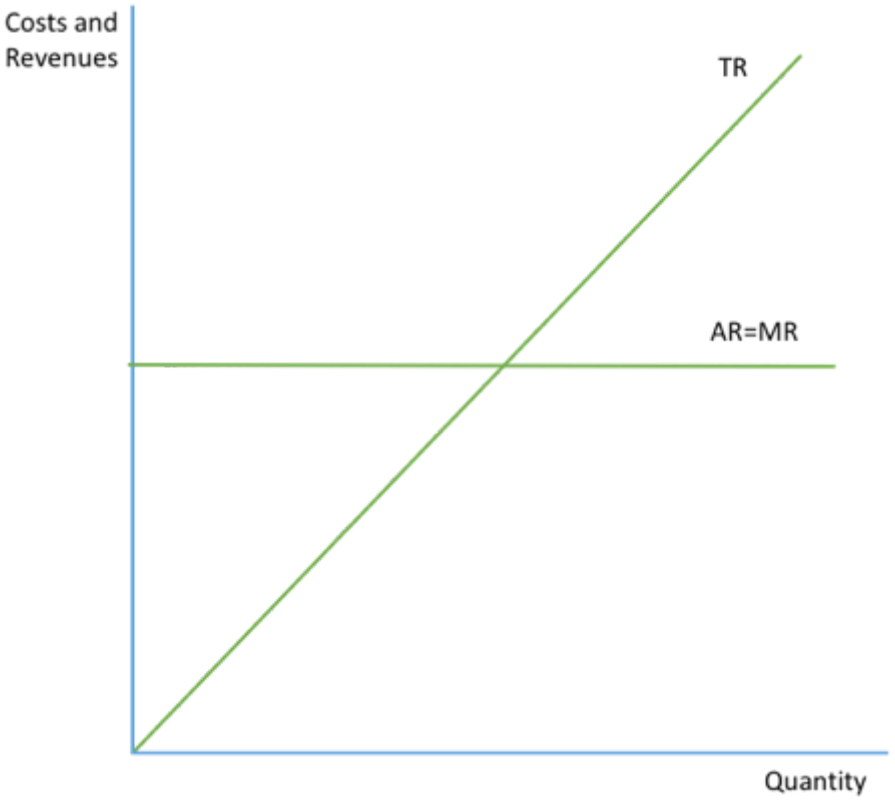
Types of revenue:

Revenue is the money earned from the sale of goods and services:

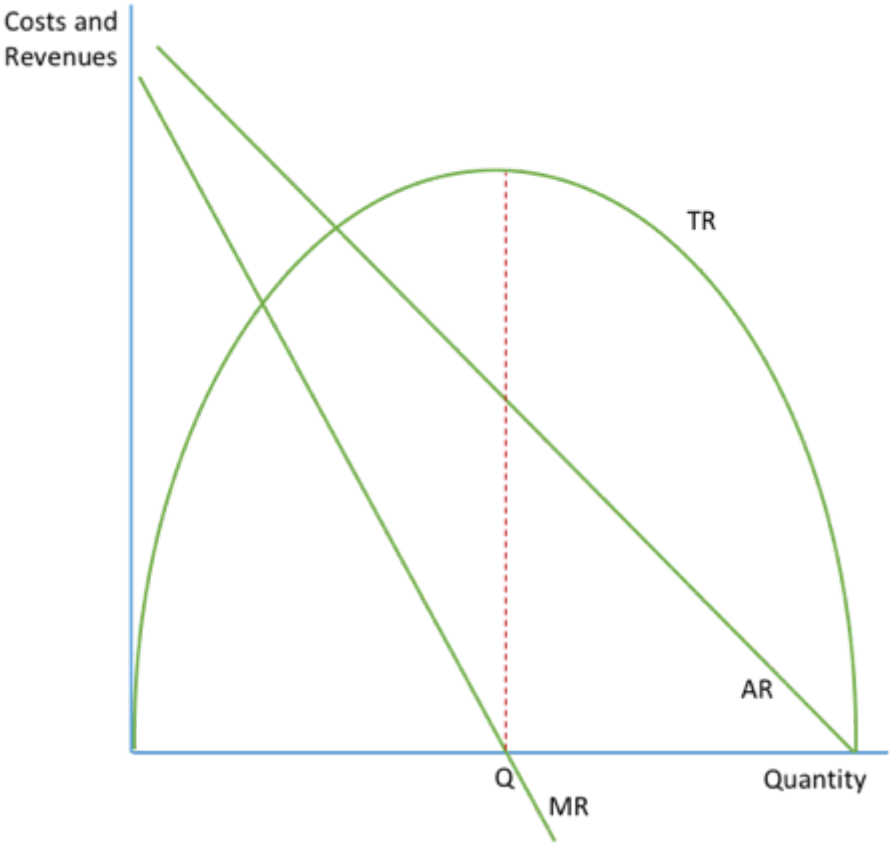
- **Total revenue (TR):** The total amount of money coming into the business through the sale of goods and services. quantity x price
- **Average revenue (AR)**: Demand is equal to AR: $\frac{\text{total revenue}}{\text{output}}$
- **Marginal revenue (MR):** The extra revenue that the firm earns from selling one more unit of production: total revenue from 'N' goods- total revenue from (N-1) goods OR $\frac{\text{change in total revenue}}{\text{change in output}}$

Price elasticity:

Some firms experience a **perfectly elastic demand curve**; these are firms in perfect competition, a concept looked at in the next unit. These firms have no price setting power. In this case, the price received by the firm for the good is constant and so MR=AR=D. Their demand curve is horizontal. The TR curve is upward sloping because prices are constant and so the more goods that are sold, the higher the revenue made.



However, for most goods, the price decreases as output increases and there is a **downward sloping demand curve** and therefore a downward sloping AR curve. The demand curve for the firm is the same as the firm's AR revenue curve, as it indicates the price that consumers are willing to pay for each quantity sold. Firms with a downward sloping demand curve are firms that are in imperfect competition and so they have some **price setting power**.



For goods with a downward sloping demand curve, the **elasticity of the curve is linked to marginal revenue**. In Theme 1, we ignored that the price elasticity of demand changes along the demand curve. The concept of price elasticity and revenue learnt in Theme 1 can be developed and connected to MR in this unit:

- If **marginal revenue is positive**, when the firm sells the product at a lower price (or when they increase output), total revenue still grows and so the demand curve is **elastic**. Up until output Q, the demand curve is elastic.
- If **MR is negative**, TR decreases as price decreases (or output increases) and so the demand curve is **inelastic**. After output Q, the demand curve is inelastic.
- When **MR=0**, **TR is maximised** and the demand curve is **unitary elastic**; this is at point Q.

This explains why the **TR curve is a U-shape**: at first, total revenue rises with output (when MR is positive) but it then begins to decline (when MR is negative).

3.3.2 Costs

Types of costs:

The economic cost of production for a firm is the **opportunity cost of production**; the value that could have been generated had the resources been employed in their next best use.

In the short run, at least one factor of production is fixed and cannot be changed and so therefore some costs are fixed whilst in the long run, all costs are variable e.g. more property can be used so rent becomes higher.

- **Total cost (TC)**: The cost of producing a given level of output: fixed + variable costs
- **Total fixed cost (TFC)**: Costs that do not change with output and remain constant e.g. rent, machinery
- **Total variable cost (TVC):** Costs that change directly with output e.g. materials
- **Average (total) cost (ATC)**: $\frac{\text{total costs}}{\text{output}}$
- **Average fixed cost (AFC)**: $\frac{\text{total fixed cost}}{\text{output}}$
- **Average variable cost (AVC):** $\frac{\text{total variable cost}}{\text{output}}$
- **Marginal cost (MC):** The extra cost of producing one extra unit of a good: total cost of producing N goods - total cost of producing (N-1) goods OR $\frac{\text{change in total cost}}{\text{change in output}}$

Short run cost curves:

- The short run is the length of time when **at least one factor of production is fixed** and cannot be changed; this varies massively with different types of production. The long run is when **all factors of production become variable.**

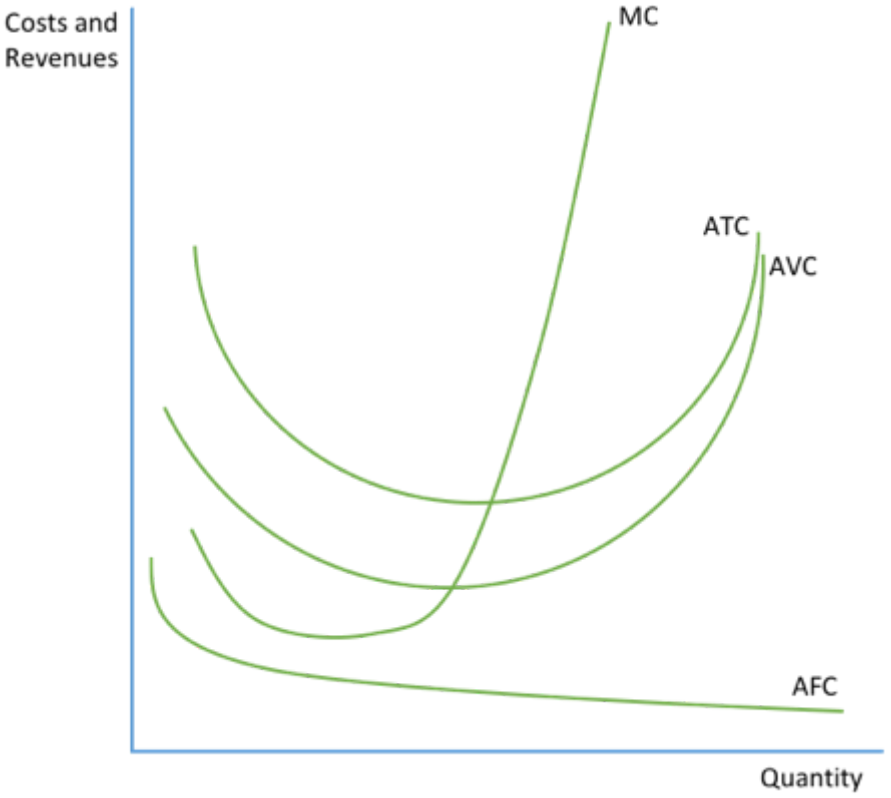
Diminishing marginal productivity:

- If a factor of production is fixed, this will **affect the business if it decides to expand.** More workers can be added relatively easily and this will see an increase in production as machinery is used more efficiently. However, it will take a long time for the factory to expand and adding more labour will mean that they will have less and less impact on the amount produced as they get in the way and have no machines to use. This is called the Law of Diminishing Returns or **diminishing marginal productivity**.

- Diminishing marginal productivity means that if a variable factor is increased when another factor is fixed, there will come a point when each extra unit of the variable factor will produce less extra output than the previous unit.

- Marginal output will decrease as more inputs are added in the short run. This will mean that the **marginal cost of production will rise.**

Curves:

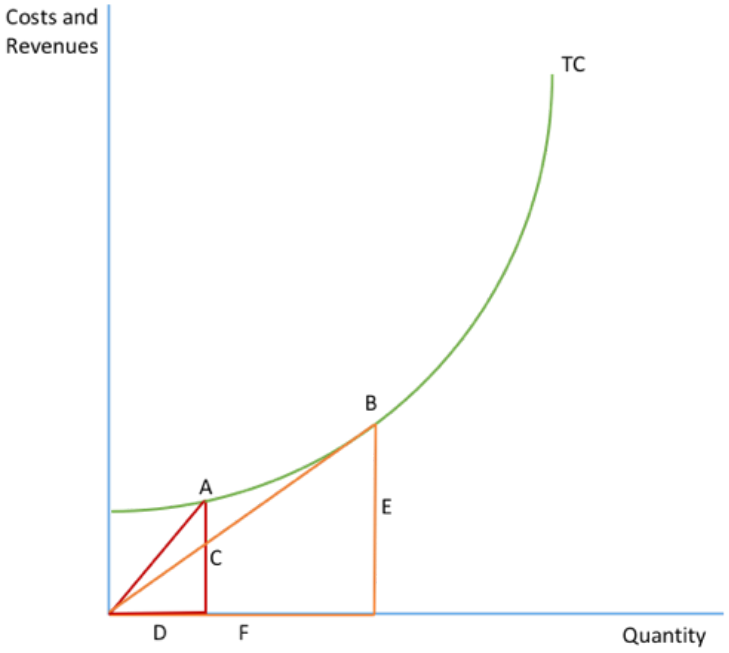


- The **average fixed cost curve** (AFC) starts high because the whole fixed costs are being divided by a small output. As output is increased, AFC falls as the same amount is divided by a larger number.
- The **average total cost curve** (AC/ATC) is U-Shaped due to the law of diminishing marginal productivity. Costs initially fall as machinery is used more efficiently but as production continues to expand, efficiency falls as machinery is overused.
- The **average variable cost curve** (AVC) is also U-Shaped, but it gets closer to ATC as output increases since AFC gets smaller.
- The **marginal cost** (MC) will also be U-Shaped due to the law of diminishing marginal productivity. It will initially fall as the machines are used more efficiently but will rise as production continues to rise.

The marginal cost line will always cut the AC line at the lowest point on the AC curve: if MC is below AC, then AC will continue to fall since producing one more costs less than the average so the average falls; but if MC is above AC, then AC will rise. Marginal costs can be rising whilst AC is still falling, as long as MC is still below AC.

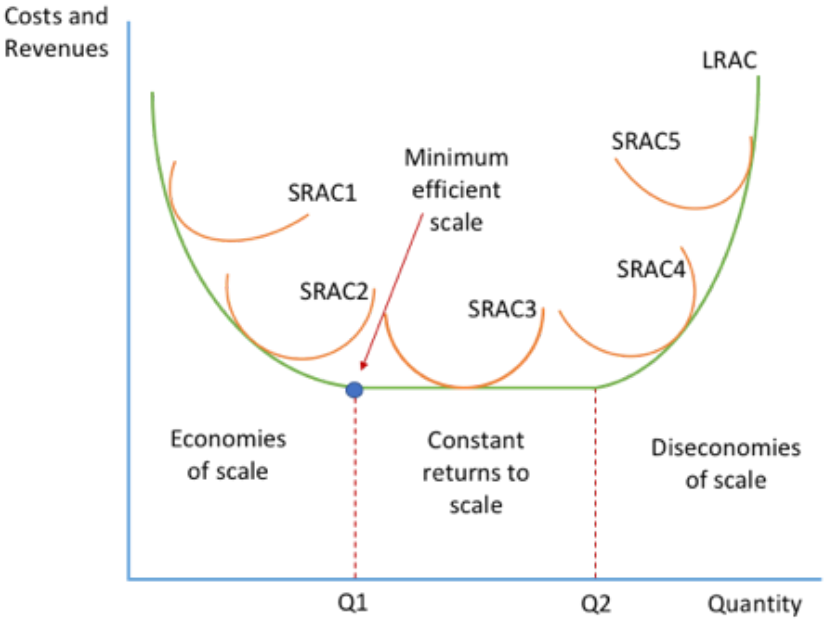
Each firm will have a different **total cost curve.** If average costs are constant, the line would be a straight diagonal line beginning at the origin. When output is 0, fixed costs are equal to total costs since there are no variable costs. Average costs can be worked out from the total cost curve: at point A, average costs are C/D whilst at point B, average costs are E/F.

Average costs at B are lower than at A, since the gradient of A is steeper than B. The tangent to the total cost curve is marginal cost.



The relationship between short-run and long-run cost curves:

Short run average cost (SRAC) curves are U-Shaped because of the law of diminishing returns whilst long run average cost (LRAC) curves are **U-Shaped** because of **economies and diseconomies of scale.**



The LRAC is an '**envelope'** for all associated SRAC curves because the LRAC is either equal to or below the relevant SRAC as shown in the diagram. The firm may initially be set up to produce a certain amount a day and have enough machinery to do so effectively. They may become popular and need to produce more than that this amount and in the short run this will cause a rise in SRAC due to the law of diminishing returns as some factors of production are fixed. In the long run, all factors become variable and so the SRAC curve can be shifted. The new SRAC curve will be lower since the firm is able to enjoy economies of scale. This will continue to occur until the firm begins to experience constant returns to scale and eventually diseconomies of scale.

- Up until output Q1, the firm experiences economies of scale and so sees falling LRAC.
- From output Q1 until output Q2, the firm has constant returns to scale where their LRAC are constant
- Any output above Q2 means the firm experiences diseconomies of scale and their LRAC rises.

Shifts and movement of the LRAC curve:

- The long run average cost curve is a boundary representing the **minimum level of average costs attainable at any given level of output.** Points below the LRAC are unattainable and producing above the LRAC is inefficient.

- Movement along the LRAC is due to a **change in output** which changes the average cost of production due to internal economies/diseconomies of scale. A shift can occur due to external economies/diseconomies, taxes or technology, which affects the cost of production for a given level of output.

Synoptic point:

Macroeconomic changes can have implications on a firm's cost curves. For example, exchange rates or tax changes.

A firm's costs also have macroeconomic effects. High costs will reduce the competitiveness of the country, and this will reduce exports and lead to a current account deficit. It will also reduce LRAS.

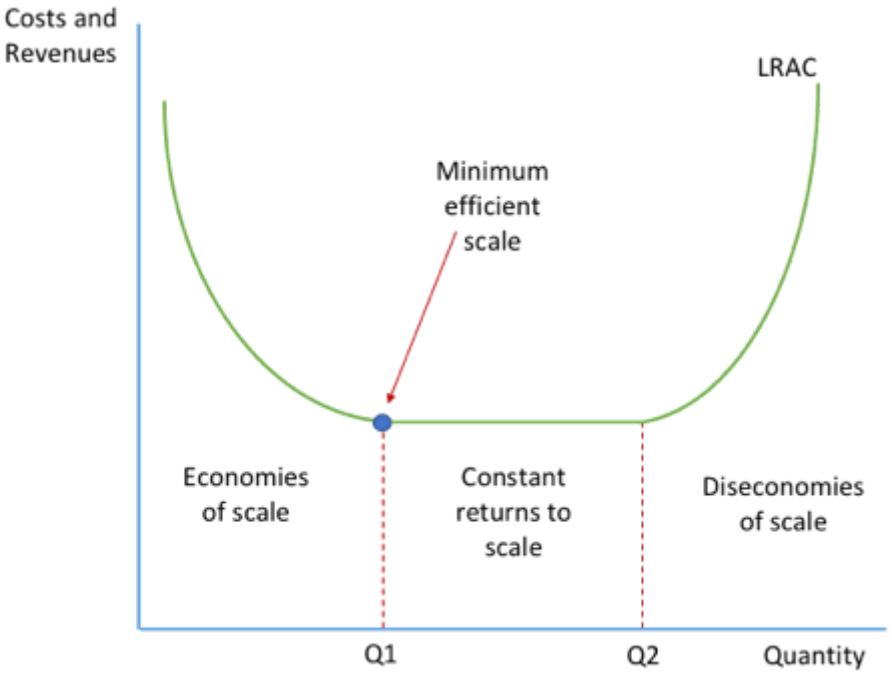
3.3.3 Economies and diseconomies of scale

Economies of scale are the **advantages of large scale production** that enable a large business to produce at a lower average cost than a smaller business. As a result, the firm is able to experience **increasing returns to scale** where an increase in inputs by a certain percentage will lead to a greater percentage increase in output.

Diseconomies of scale are the **disadvantages that arise in large businesses** that reduce efficiency and cause average costs to rise. The firm experiences **decreasing returns to scale,** where output increases by a small percentage than inputs.

Constant returns to scale is where firms increase inputs and receive an increase in output by the same percentage.

The **minimum efficient scale** is the minimum level of output needed for a business to fully exploit economies of scale. It is the point where the LRAC curve first levels off and when constant returns to scale is first met.



Internal economies of scale:

An internal economy of scale is an advantage that a firm is able to enjoy because of a growth in the firm, independent of anything happening to other firms or the industry in general.

Technical economies: These arise as a result of what happens to the production process.

- **Specialisation:** Large firms will be able to appoint specialist workers and buy specialist machines which will be able to do their jobs more quickly and better than machines/workers which are not specialised.

- **Balanced teams of machines:** Large firms can afford to buy a number of every kind of machine for each stage of production. By combining these machines, they can ensure they run each machine at its optimal level. Smaller companies may only be

able to afford one machine for each stage and if one stage of production runs faster than the other, machines will spend a long time turned off.

- **Increased dimensions:** This relates to the fact that if you double the size of the walls you can increase the area by four times, or if you double the size of a container you increase the amount it can carry by more than double. This all occurs without doubling the cost.

- **Indivisibility of Capital:** Some processes require huge items of machinery and investment that make it only possible for them to produce on a large scale.

- **Research and development:** Often it is only large firms that can afford to carry out large scale research and development, which means they are able to gain a large advantage over their competitor.

Financial economies:

- Large firms have greater security because they have more assets and are therefore less likely to be forced out of business overnight. As a result, it is easier for them to obtain finance and interest rates will be lower due to lower risk. This makes investment more accessible.

Risk bearing economies:

- Large companies are able to operate in a range of different markets, producing different products which means that if one area of business fails, their whole business will not collapse.

Managerial economies:

- Large companies can afford to appoint specialist managers in every field, who are specialised and so have greater knowledge and are able to do their job better. Staff represent an indivisibility and so small firms cannot employ specialist staff.

Marketing and purchasing economies:

- **Buying in bulk:** Large firms are able to buy in large numbers so may be able to buy their raw materials at a cheaper price than competitors.

- **Specialisation:** Like other areas, businesses can afford to take on specialist buyers and sellers who could be more efficient due to the extra time and knowledge.

- **Distribution:** Large firms are able to enjoy preferential rates from transport companies because they offer the company a lot of businesses. They will be transporting in large batches which means that they will be able to transport in full, large transporters which are cheaper per item than half-full or smaller transporters. Large businesses can also establish regional distribution centres which enables them to reduce transport costs by using large transporters over long distances, storing

goods in the distribution centre and using smaller transport to take stock to individual shops.

External economies of scale:

An external economy of scale is an advantage which arises from the growth of the industry within which the firm operates, independent to the firm itself. These cause the LRAC curve to shift downwards.

Labour:

- Businesses established in an area with other successful firms from the same industry find that **labour tends to come to that area** if they want a job in that industry, for example Silicon Valley. This reduces the cost and time take to recruit.
- Another advantage for large industries is that **local education and training providers** are more likely to develop courses to prepare people to take up jobs in these businesses.
- Firms will be able to hire staff who have been **trained by other businesses**, which is cheaper and more efficient for the firm than training the workers themselves.

Support services:

- Businesses who provide products or services for large businesses will naturally move to the area where those businesses are based, which reduces transport cost/time delays for the business.

Diseconomies of scale:

Workers:

- In a large business, people can think their efforts go unnoticed and have less chance of promotion so lose motivation and work less hard. They can also lose their sense of belonging and have less personal commitment and identification with the business.

Geography:

- A firm may have to transport finished products huge distances and firms may find it harder to control parts of the business which is miles away.

Change:

- It takes much longer and is much more difficult for a large firm to respond to change.

Prices of materials:

- As business grows so does their demand for raw materials and equipment. Although this can increase their bargaining power as they buy in bulk, an increase in demand can cause prices to rise and therefore increase production costs. This could also occur if the whole industry increases and so firms bid up prices.

Management:

- **Coordination and control:** As a business grows, it will become progressively more difficult to coordinate and keep control of all the different parts of the business. Coordination of a multinational company producing different parts of a car around the world is much more difficult than coordinating and controlling the work of a local garage. This could lead to poorer quality to work and business decisions which don't work well together.

- **Communication:** Within a large business, communication can be slow and also can lose accuracy because of the distance and the number of people it has to be passed through.

3.3.4 Normal profits, supernormal profits and losses

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Profit is the difference between revenue and costs.

Condition for profit maximisation:

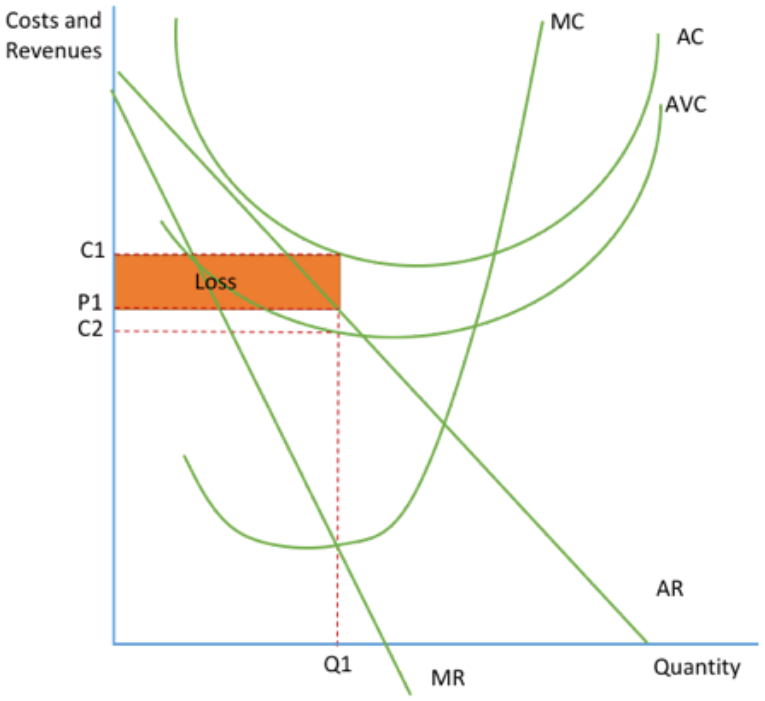
- Profit is maximised when **TR and TC are furthest apart**, with TR above TC.
- It also occurs when **MC=MR**: this will always be true because if producing one more adds more to revenues than it does to cost (i.e. MR is higher than MC), producing that must have increased profit and vice versa. Sometimes, MR and MC may cross at two points and thus the profit maximising point is where marginal cost rises as it crosses the MR line.

Normal profit, supernormal profit and losses:

- Normal profit is the **return that is sufficient to keep the factors of production committed to the business**. In economics, costs include the level of profit needed to keep the producer in the market and to cover the opportunity cost. Therefore, if the firm covers its costs it earns normal profit. This is at the point where AC=AR or TC=TR.
- If the **profit is greater than normal profit**, it is earning supernormal, abnormal or monopoly. This occurs where AR>AC or TR>TC.
- A loss is where the firm **fails to cover its costs,** AR<AC or TR<TC.

Short-run and long-run shut-down points:

- When a business is making a loss, it may not necessarily be the best decision to shut down straight away: this **depends on the average variable cost**.
- If **AVC<AR** then **firms should continue production**. Each good they make will generate more revenue than it cost for them to make it, and so this will help them to reduce the size of the loss by covering some of the fixed cost. In this case, they should only shut down when their fixed costs increase e.g. when machinery needs to be replaced, when their lease is up etc.
- However, if **AVC>AR** then producing more goods will increase the loss. As a result, they **should leave the industry immediately**.
- In the long run, the firm needs to make at least normal profit for them at stay in the industry. However, in the short run they should produce as long as their revenue covers their variable costs. Hence, the short run shut-down point is where **AVC=AR**.
- Firms tend to produce on the shut run point even though it does not affect their losses as they do not want to let go of their workers or let down customers.



In the diagram, the business will continue to produce in the short run. If they are profit maximising, they will produce where MR=MC at the output Q1. This will mean their price is P1, determined by the AR curve at this level of output, and their costs are C1, determined by the AC curve. They are making a loss of the shaded area. However, their AVC cost is only C2 and AR>AVC so they will produce in the short run.