

Edexcel Economics (A) A-level

Theme 3: Business Behaviour and the Labour Market

3.3 Revenues, Costs and Profits


Summary Notes




3.3.1 Revenue

Formulae to calculate types of revenue




Total revenue:

-  Total revenue is calculated by **price x quantity sold**. It is the revenue received from the sale of a given level of output.





-  When price is constant, TR is as shown in the diagram. Prices are lowered to achieve higher sales.



Marginal revenue:

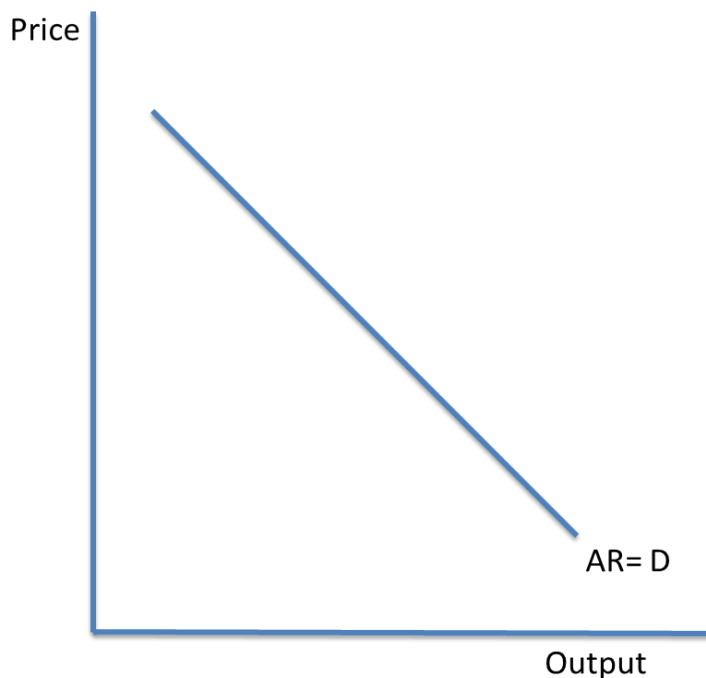
-  This is the extra revenue a firm earns from the sale of one extra unit. When marginal revenue is 0, total revenue is maximised.
-  The point where $MR = 0$ on the revenue diagram is directly below the midpoint of the AR curve. This is in the middle of the demand curve and it is the point where $PED = 1$.
-  If prices rise or fall around this point, TR would fall.

Average revenue:


-  Average revenue (AR) is the average receipt per unit. This is calculated by $TR / \text{quantity sold}$. In other words, this is the price each unit is sold for.
-  The AR curve is the firm's demand curve. This is because the average revenue curve is the price of the good.

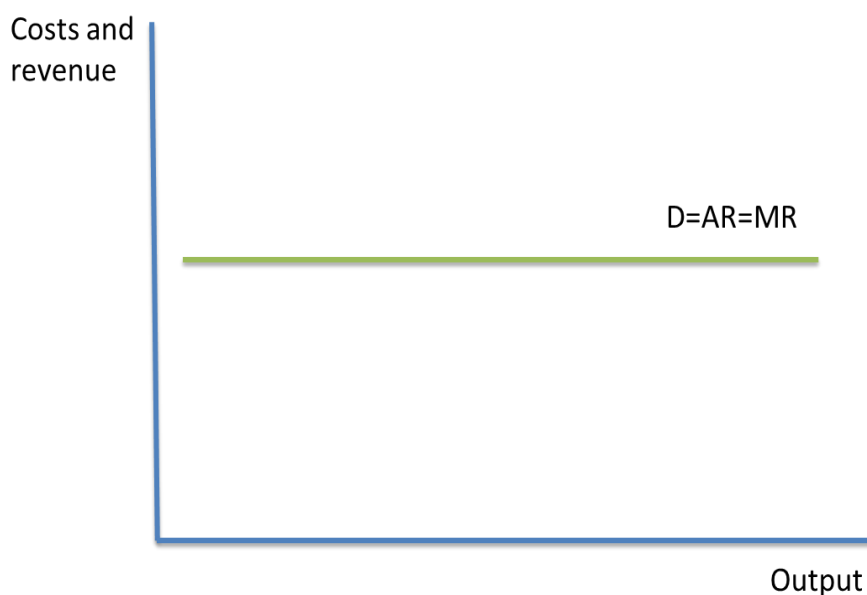





-  In markets where firms are **price takers**, the AR curve is horizontal. This shows the perfectly elastic demand for their goods.
-  In markets where firms are **price makers**, the AR curve is downward sloping.

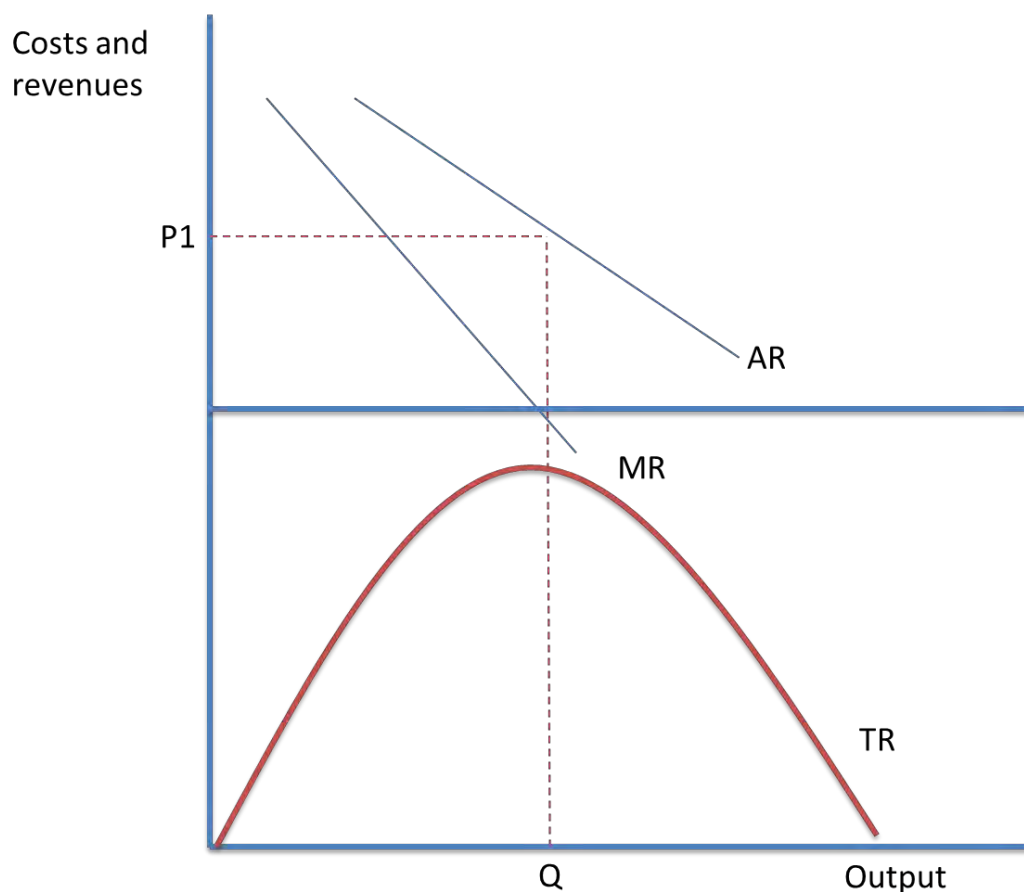



 **PED and its relationship to revenue concepts:**

-  In markets where firms are **price takers**, the AR curve is horizontal. This is because the price received for the good is constant. This shows the perfectly elastic demand for their goods. AR= the demand curve, because AR is the price of the good, and the demand curve shows the relationship between price and quantity. Average revenue = marginal revenue.



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 If demand is elastic and price increases, the quantity demanded will fall. The effect on total revenue depends on how elastic the demand is.
 For example, if price rises by 10% and demand decreases by 20%, then the elasticity of demand is +2. This means demand is very elastic and total revenue decreases.
 If prices rise by 10% and demand decreases by 1%, the price elasticity of demand is +0.1. Demand is relatively inelastic, and revenue increases.
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 Usually, the AR curve is downward sloping, because the price per unit is reduced as extra units are sold.
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 The price elasticity of demand changes as you move down a downward sloping demand curve.




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 The MR curve is twice as steep as the AR curve. This does not have to be proven in the exam. The AR curve is a trend line.




3.3.2 Costs

Formulae to calculate types of costs


Total cost:

 This is how much it costs to produce a given level of output. An increase in output results in an increase in total costs. **Total costs = total variable costs + total fixed costs**

Total fixed cost:


 In the short run, at least one factor of production cannot change. This means there are some **fixed costs**. Fixed costs do not vary with output. For example, rents, advertising and capital goods are fixed costs. They are indirect costs.

Total variable cost:

 In the long run, all factor inputs can change. This means all costs are **variable**. For example, the production process might move to a new factory or premises, which is not possible in the short run. Variable costs change with output. They are direct costs. For example, the cost of raw materials increases as output increases.


Average costs:


 **Average (total) costs (ATC) = total costs / quantity produced. $ATC = AVC + AFC$.**

 **Average fixed costs (AFC) = total fixed costs/quantity.**


 **Average variable costs (AVC) = total variable costs/quantity.**


Marginal cost:

 This is how much it costs to produce one extra unit of output. It is calculated by $\Delta TC \div \Delta Q$.



 When a firm's total variable costs increase, both its marginal cost curve and average cost curve shift upwards. When a firm's total fixed costs increase, only its average cost curve shifts upwards.

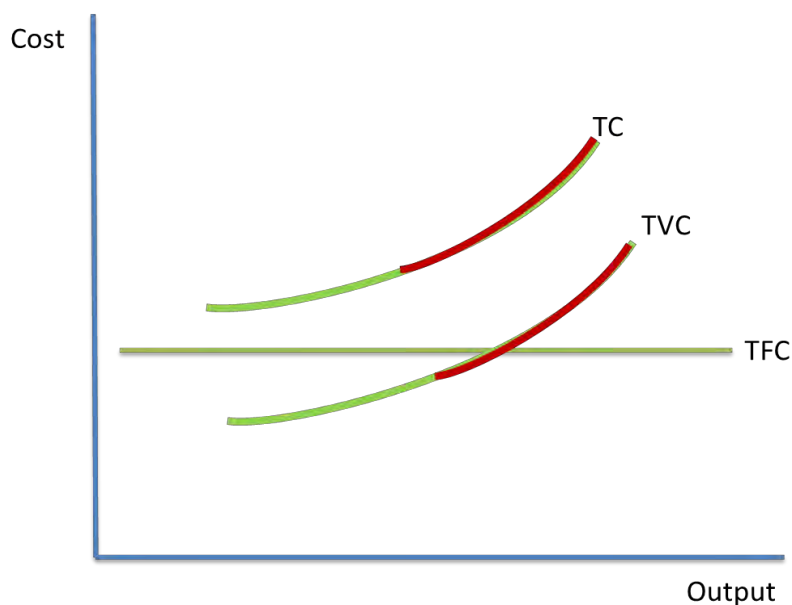
Derivation of short-run cost curves from the assumption of diminishing marginal productivity



 The measure of the short run varies with industry. There is no standard. For example, the short run for the pharmaceutical industry is likely to be significantly longer than the short run for the retail industry. In the short run, there are some fixed costs. In the long run, all costs are variable. In the very long run, the state of technology can change, such as electronics.

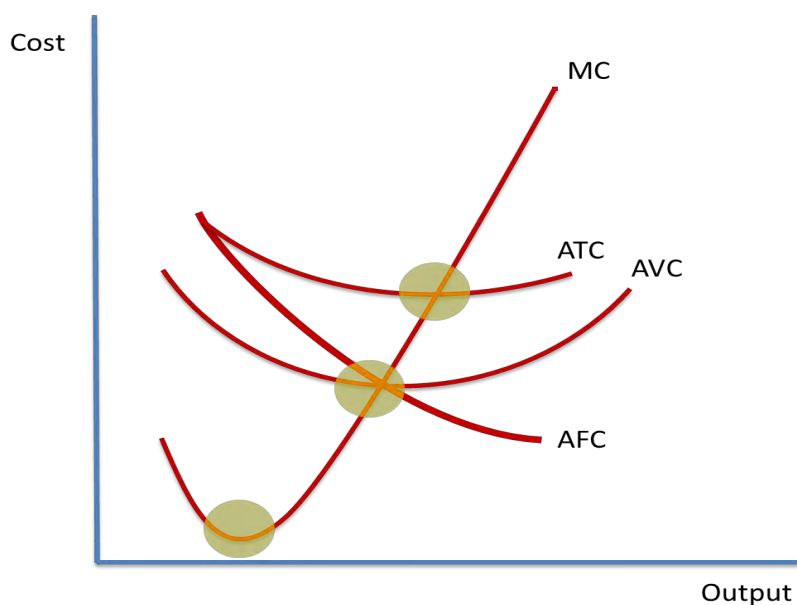
 The **law of diminishing marginal productivity** states that adding more units of a variable input to a fixed input, increases output at first. However, after a certain number of inputs are added, the marginal increase of output becomes constant. Then, when there is an even greater input, the marginal increase in output starts to fall.




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 In other words, at some point in the production process, adding more inputs leads to a fall in marginal output.
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 This could be due to labour becoming less efficient and less productive, for example. At this point, total costs start to increase.






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 On the diagram, the red parts show diminishing returns, where the cost of production starts to rise with increased output.
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 Marginal costs rise with increasing diminishing returns.




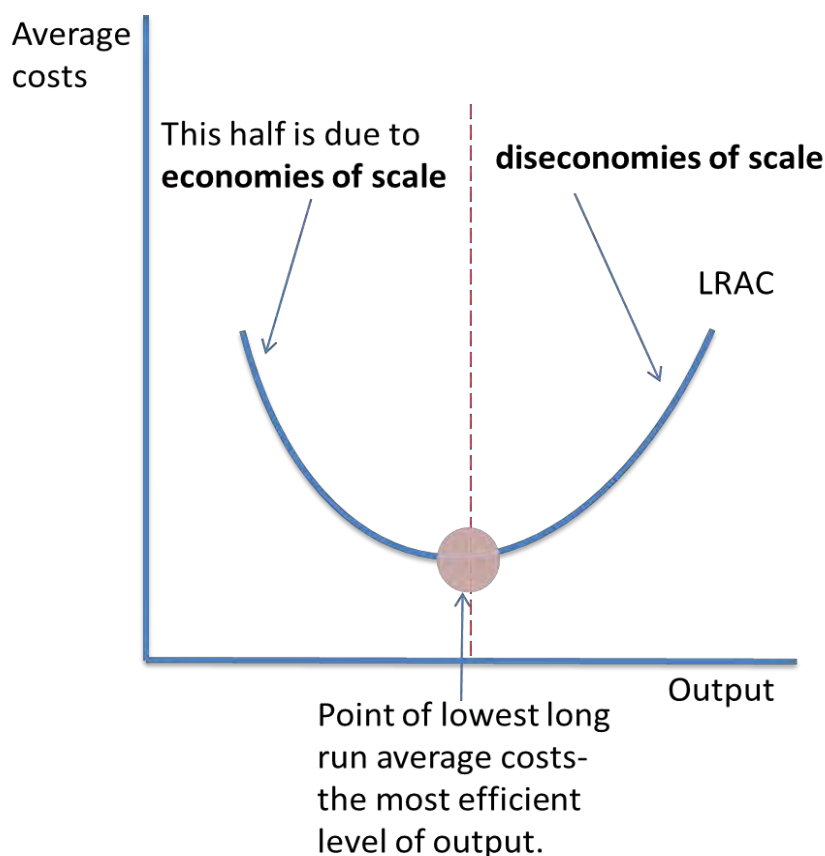
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 The diagram above shows cost curves. MC, ATC and AVC rise with diminishing returns. AFC falls with increasing output.




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 The lowest points on the curves, as shown by the yellow highlighted circles, are the points where diminishing marginal productivity sets in. Before this, average costs are falling. After this, average costs are rising.
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 The MC curve cuts through the lowest points on the ATC and AVC curves.
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 As the output increases, the average variable cost curve tends towards the average total cost curve. This is because as output increases, the average fixed cost becomes increasingly small. This means the difference between the average variable cost curve and average total cost curve becomes increasingly small.

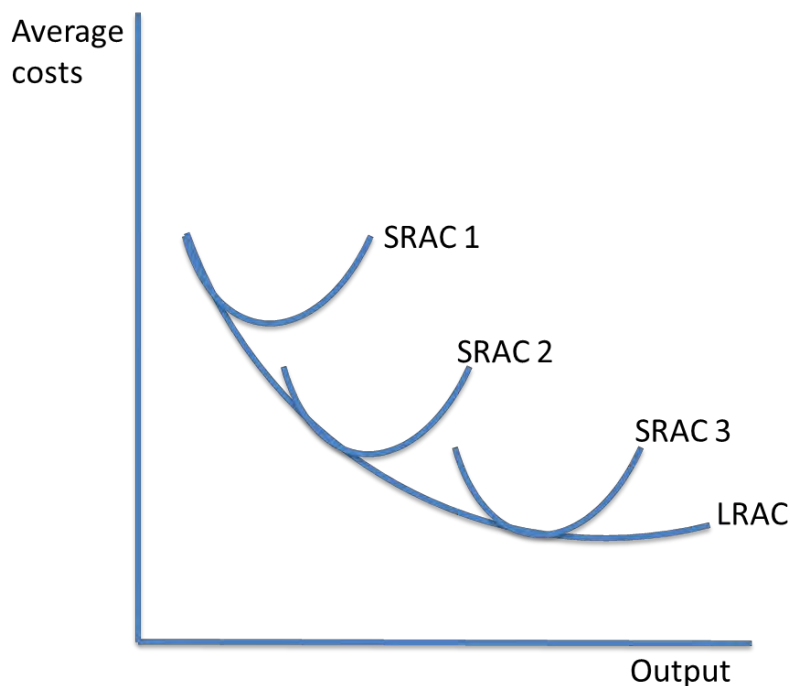
Relationship between short-run and long-run average cost curves




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 The LRAC curve is shown in the diagram below. The point of lowest LRAC is the **minimum efficient scale**. This is where the optimum level of output is since costs are lowest.





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 If fixed costs are high, average costs are lowered as output increases. When diseconomies of scale set in, average costs increase. This is shown on the long run average cost curve because **economies of scale are only applicable in the long run.**





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 The diagram above shows the relationship between the SRAC curve and the LRAC curve. The LRAC curve envelopes the SRAC curve, and it is always equal to or below the SRAC curve. The LRAC curve shifts when there are external economies of scale, i.e. when an industry grows.
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 SRAC falls at first, and then rises, due to diminishing returns. In the long run, costs change due to economies and diseconomies of scale.
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 If $SRAC = LRAC$, the firm operates where it can vary all factor inputs.










Synoptic points:

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 Many macroeconomic effects can affect a firm's costs. Changes in the exchange rate, entering or leaving a customs union and the creation or removal of a minimum wage are all examples of macroeconomic factors which would affect a firm's costs.
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 A firm's costs has implications for the competitiveness of a country's exports. If firms in a country face high costs, they are likely to increase their prices. This makes a country's exports less price competitive on the international market, *ceteris paribus*.






3.3.3 Economies and diseconomies of scale

Internal economies of scale:






-  These occur when a firm becomes larger. Average costs of production fall as output increases.
-  Examples of internal economies of scale can be remembered with the mnemonic **Really Fun Mums Try Making Pies**
-  **Risk-bearing:** When a firm becomes larger, they can expand their production range. Therefore, they can spread the cost of uncertainty. If one part is not successful, they have other parts to fall back on.
-  **Financial:** Banks are willing to lend loans more cheaply to larger firms, because they are deemed less risky. Therefore, larger firms can take advantage of cheaper credit.
-  **Managerial:** Larger firms are more able to specialise and divide their labour. They can employ specialist managers and supervisors, which lowers average costs.
-  **Technological:** Larger firms can afford to invest in more advanced and productive machinery and capital, which will lower their average costs.
-  **Marketing:** Larger firms can divide their marketing budgets across larger outputs, so the average cost of advertising per unit is less than that of a smaller firm.
-  **Purchasing:** Larger firms can bulk-buy, which means each unit will cost them less. For example, supermarkets have more buying power from farmers than corner shops, so they can negotiate better deals.
-  There are also **network economies of scale**. These are gained from the expansion of ecommerce. Large online shops, such as eBay, can add extra goods and customers at a very low cost, but the revenue gained from this will be significantly larger.

External economies of scale:

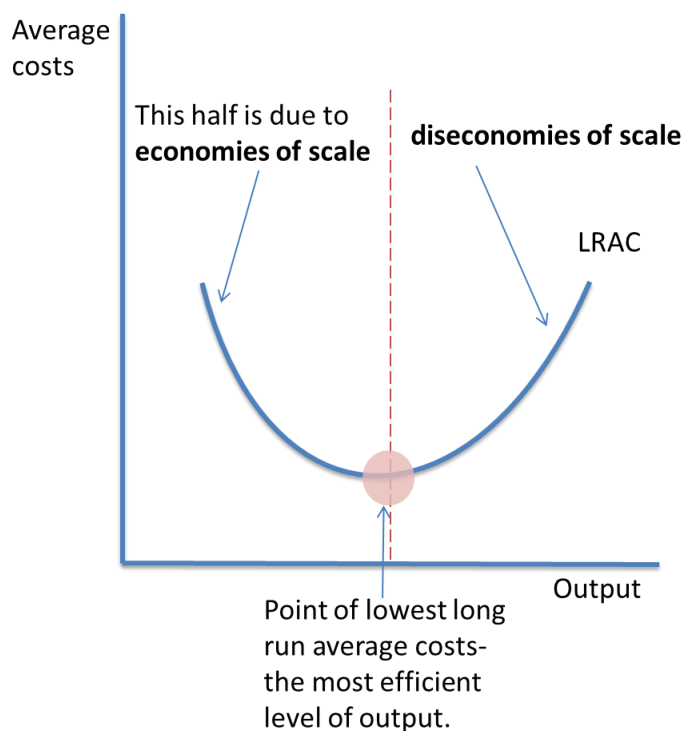
-  These occur within an industry when it gets larger.
-  For example, local roads might be improved, so transport costs for the local industries will fall.
-  Also, there might be more training facilities or more research and development, which will also lower average costs for firms in the local area.




Diseconomies of scale:



-  These occur when output passes a certain point and average costs start to increase per extra unit of output produced.
-  Examples include:
-  **Control:** It becomes harder to monitor how productive the workforce is, as the firm becomes larger.
-  **Coordination:** It is harder and complicated to coordination every worker, when there are thousands of employees.
-  **Communication:** Workers may start to feel alienated and excluded as the firm grows. This could lead to falls in productivity and increases in average costs, as they lose their motivation.

 **Long run average cost curve:**





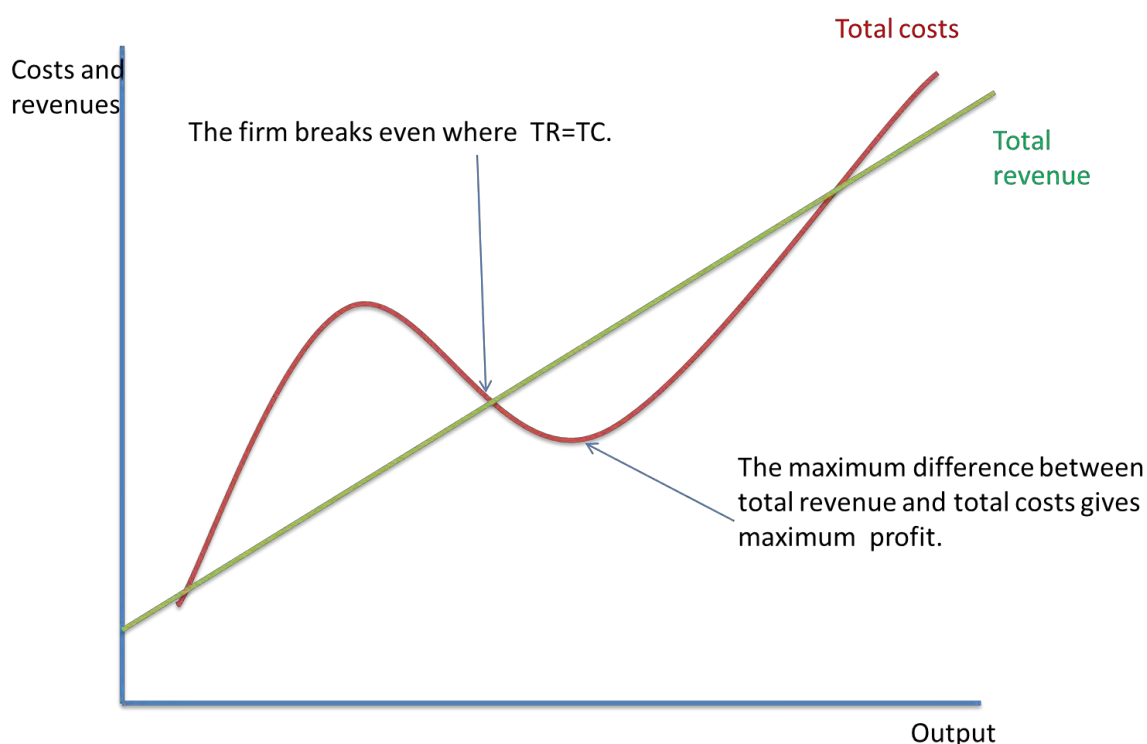
-  Initially, average costs fall, since firms can take advantage of **economies of scale**. This means average costs are falling as output increases.
-  After the **optimum level of output**, where average costs are at their lowest, average costs rise due to **diseconomies of scale**.
-  The point of lowest LRAC is the **minimum efficient scale**. This is where the optimum level of output is since costs are lowest, and the economies of scale of production have been fully utilised.






3.3.4 Normal profits, supernormal profits and losses

 **Condition for profit maximisation:**

-  Profit is the difference between total revenue and total cost. It is the reward that entrepreneurs yield when they take risks.
-  **Profit maximisation** occurs when marginal cost = marginal revenue ($MC = MR$). This is so that each extra unit produced gives no extra loss or no extra revenue.







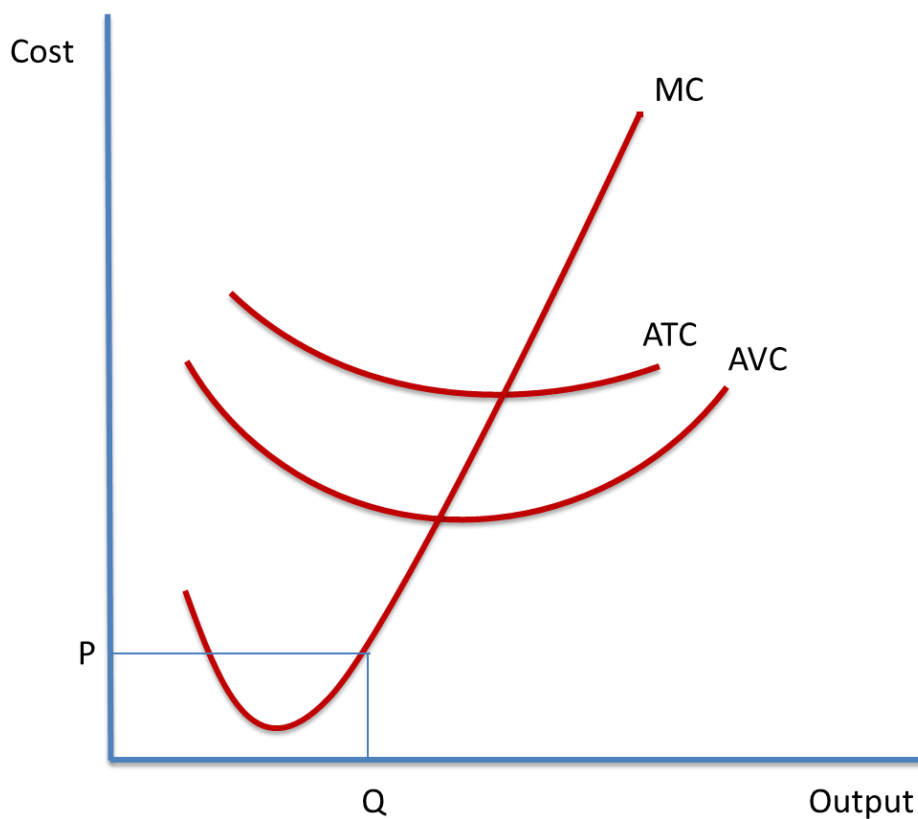
 **Normal profit, supernormal profit and losses:**


-  **Normal profit:** Normal profit is the minimum reward required to keep entrepreneurs supplying their enterprise in the long run. It covers the opportunity cost of investing funds into the firm and not elsewhere. This is when total revenue = total costs ($TR = TC$). Normal profit is considered to be a cost, so it is included in the costs of production.
-  **Supernormal profit:** Supernormal profit (also called abnormal or economic profit) is the profit above normal profit. This exceeds the value of opportunity cost of investing funds into the firm. This is when $TR > TC$.
-  **Losses:** A firm makes a loss when they fail to cover their total costs.



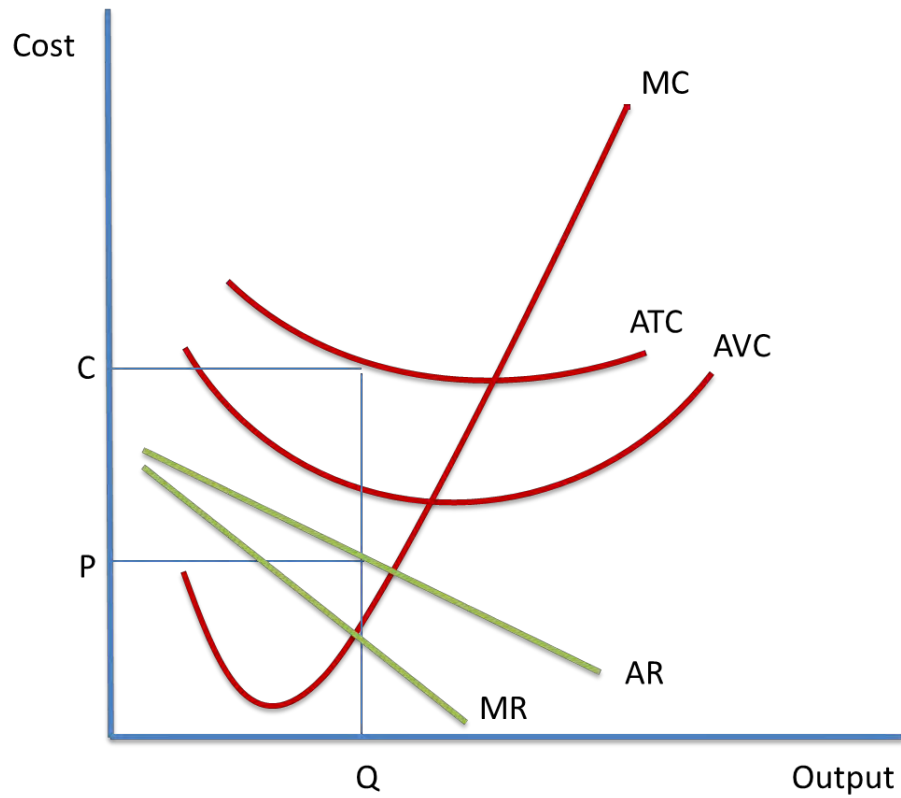
Short-run and long-run shut down points:


-  A firm which profit maximises continues to operate in the short run if $P > AVC$. This means firms continue to produce in the short run as long as variable costs are covered.
-  When shutting down, no variable costs are incurred by the firm. However, fixed costs have to be paid whether the firm shuts down or continues to produce. This means that fixed costs are not considered when a decision to shut down is being made.
-  The shut-down point is $P < AVC$, when variable costs cannot be covered. This is at the lowest point on the AVC curve.
-  When a firm shuts down, it is a short run decision. This means production is only temporarily stopped. However, in the long run, the firm can leave the industry. This will happen when $TR < TC$.



-  In the diagram, price is below AVC. Therefore, producing Q costs (AVC) more than the revenue they earn (P), so in the short run, the firm shuts down.





 This diagram shows how the revenue curves lie below the cost curves. Therefore, $P < C$. The rectangle formed shows the area of loss. At a price of P and an output of Q , the firm would shut down in the short run.

