ECONOMICS 3

COST OF PRODUCTION

	Factors of Production	Cost
1	Land	
2	Labour	
3	Capital	
4	Entrepreneur	

In cost theory normal profit is treated as a cost. It is the amount of profit necessary to keep an entrepreneur in his or her present activity. Any profit earned in excess of this normal profit is known as supernormal, abnormal, or excess profit

- The short run is a time period in which the amount of at least one factor of production (land, labour, capital or enterprise) **is fixed**.
- The long run is a period sufficiently long to allow **full flexibility in all the factors of production used**

SHORT RUN COSTS

- **Total cost (TC):** The cost of all the resources needed to produce a given level of output. Total cost comprises total fixed cost (TFC) and total variable cost (TVC).

  - Fixed costs are costs which do not change when levels of production change, for example, the rent of premises.
  - Variable costs are costs which change according to the level of output, for example, raw material costs.

- **Average cost (AC):** The average cost for a given level of output is the total cost divided by the total quantity produced.

  - Average cost is made up of an average fixed cost (AFC) per unit plus an average variable cost (AVC) per unit.

- **Average fixed cost per unit (AFC):** total fixed costs divided by the number of units. It will get smaller as the number of units produced (N) increases. This is because TFC is the same amount regardless of the volume of output, so as N gets bigger, AFC must get smaller.

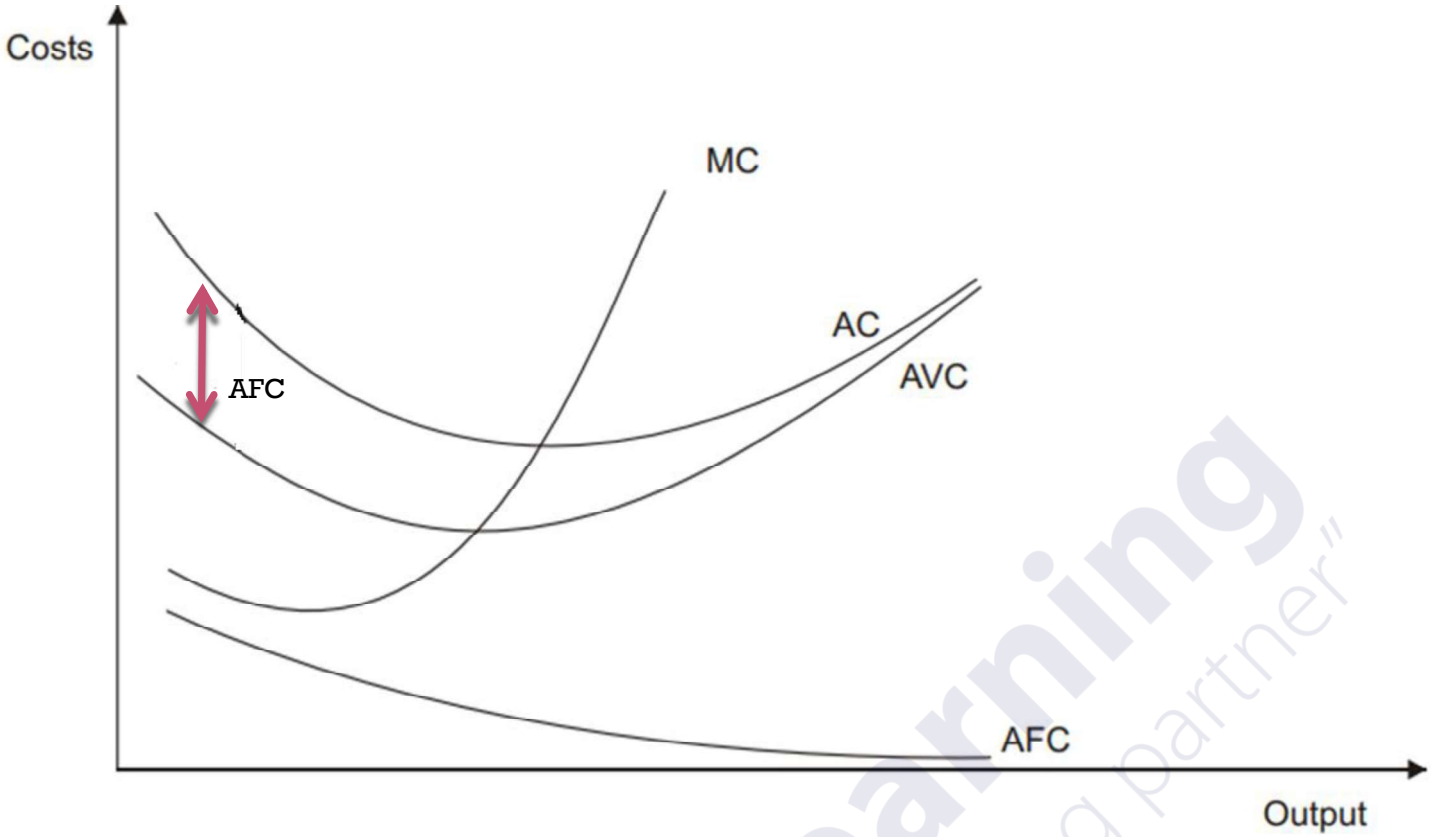
- **Average variable costs per unit (AVC**): total variable costs divided by the number of units. It will also change as output volume increases, but may rise as well as fall.

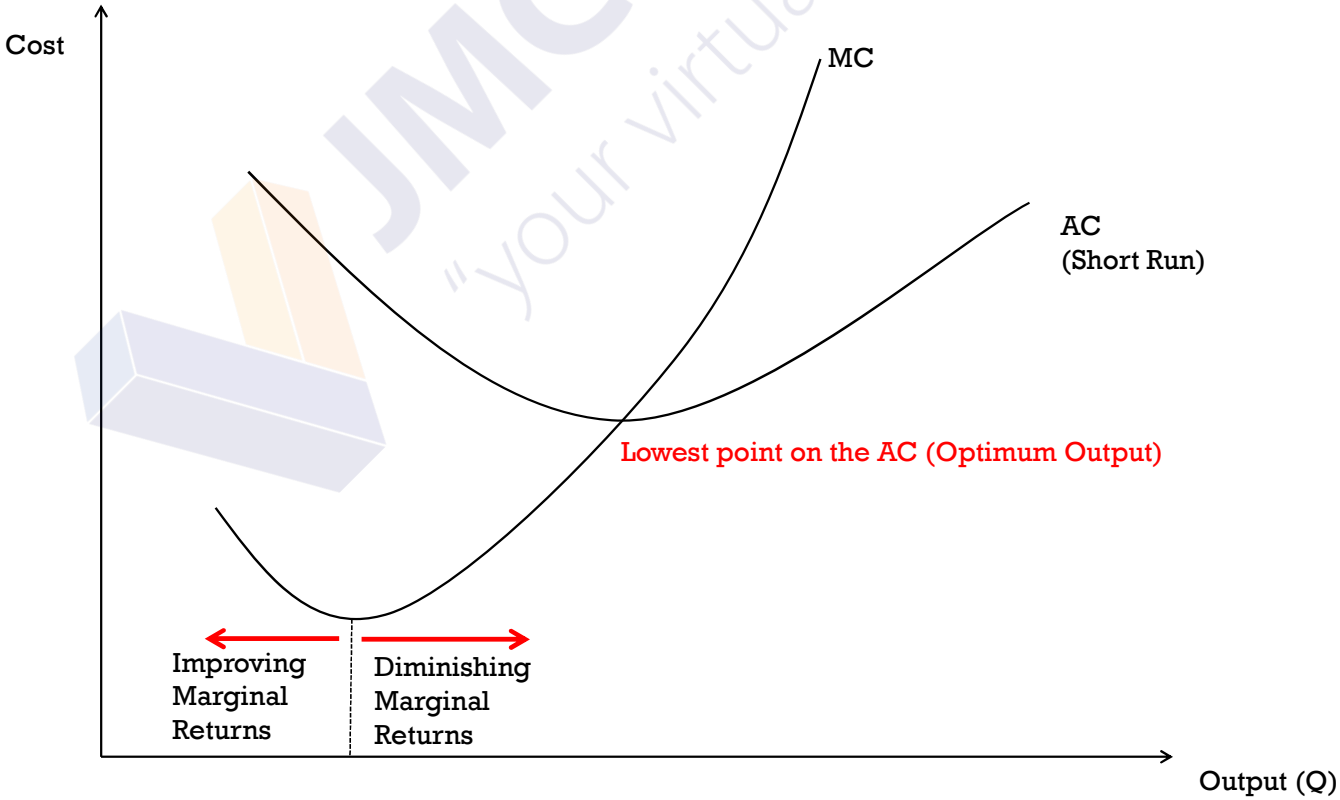
- **Marginal cost (MC):** the extra cost (incremental cost) of producing <u>one more unit of output</u>.

Eg: The marginal cost for a firm of producing the 50th unit of output is the total cost of making 50 units minus the total cost of making the first 49 units

Units	TFC	TVC	TC	AFC	AVC	AC
100	80	500				
150	80	700				
200	80	900				
250	80	1100				
300	80	1300				
350	80	1500				
400	80	1700				

Units of Output	TFC	TVC	TC	AFC	AVC	AC	MC
1	0.8	0.3					
2	0.8	0.8					
3	0.8	0.95					
4	0.8	1.2					
5	0.8	1.7					
6	0.8	2.32					
7	0.8	3.19					
8	0.8	4.32					
9	0.8	5.5					
10	0.8	7.2					





Accounting profits

For an accountant, costs can be divided into 'fixed costs' and 'variable' or 'marginal costs'. Total fixed costs per period are a given amount, regardless of the volume of production and sales. The variable cost per unit is a constant amount, so that the total variable cost of sales is directly proportional to the volume of sales.

Accounting profits = Sales Revenue - explicit costs

Explicit costs :

- Materials costs – prices paid to suppliers
- Labour costs – wages paid
- Depreciation costs on fixed assets
- Other expenses, such as rates, building rental, etc

Economic profits

Economic profits = Sales Revenue – (explicit costs + Implicit cost)

Implicit costs are benefits forgone by not using the factors of production in their next most profitable way.

1. A sole trader sells goods worth Rs 200,000,000. He incurs materials costs of Rs 70,000,000 hired labour costs of Rs 85,000,000, and other expenses of Rs 20,000,000. He has no non-current assets other than the building from which he trades, on which depreciation is not charged.

   Calculate the Accounting Profit

2. He buildings he uses in his business could have been put to another use to earn Rs15,000,000 and his own labour as a business manager could get him a job with a salary of Rs20,000,000

   Calculate the Economic Profit

3. A firm had sales revenue of $1 million last year. It spent $600,000 on labor, $150,000 on other expenses and $200,000 on materials. What was the firm's accounting profit?

If the firm's factory sits on land owned by the firm that could be rented out for $30,000 per year. What was the firm's economic profit last year?

4.

In 2020, Sudarshana was a law professor and earned Rs. 80,000 per year. But he got tired of teaching law students and decided to start his own law firm. He started his firm at the beginning of 2020. Sudarshana's revenue from his law business in 2020 was Rs. 240,000. He cashed in a Rs. 70,000 savings bond that was paying him 6% interest per year in order to start his business. He used the entire Rs. 70,000 to buy materials, paper, etc. to start up his law business. Sudarshana also hired Teena to work for him part time and paid her a total of Rs. 30,000 during 2020. Sudarshana's other business expenses for 2020 were equal to Rs. 22,000. Sudarshana also had to give up renting out a building he started using for his business. He earned $13,800 per year renting out his building before he started his business. At the end of 2020 Sudarshana was trying to decide if he should stay in business or go back to teaching law. His only concern at this point is money and he is only considering this one year.

1. Total Revenue for his Law Business
2. Explicit costs
3. Accounting Profit or Loss
4. Implicit costs
5. Economic profit or loss
6. Would you recommend Sid continue in his business or go back to teaching? Explain you answer.

5.

Wilbur Proffit set up his business one year ago.

In that time, his firm has earned total revenue of Rs 160,000, and incurred costs of Rs 125,000, including his own salary of Rs 12,000. Before, he had been a salaried employee of Dead End Ventures, earning an annual salary of Rs 20,000. To finance the business, Wilbur had to sell his investment of Rs 200,000 in government securities which earned interest of 10% pa. He used Rs 80,000 of this to buy a warehouse, whose annual commercial rental value would be Rs 11,000 pa. The remaining Rs 120,000 has been used to finance business operations.

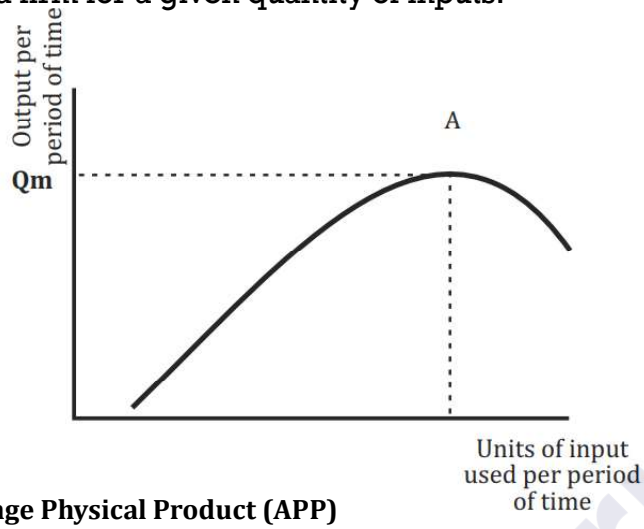
Calculate the following:

(a) The accounting profit earned by Wilbur in the last year

(b) The economic profit or loss earned

Total product / Total Physical Product (TPP)

The total product of a factor of production identifies possible levels of input. The **total** quantity of **output** produced by a firm for a given quantity of inputs.

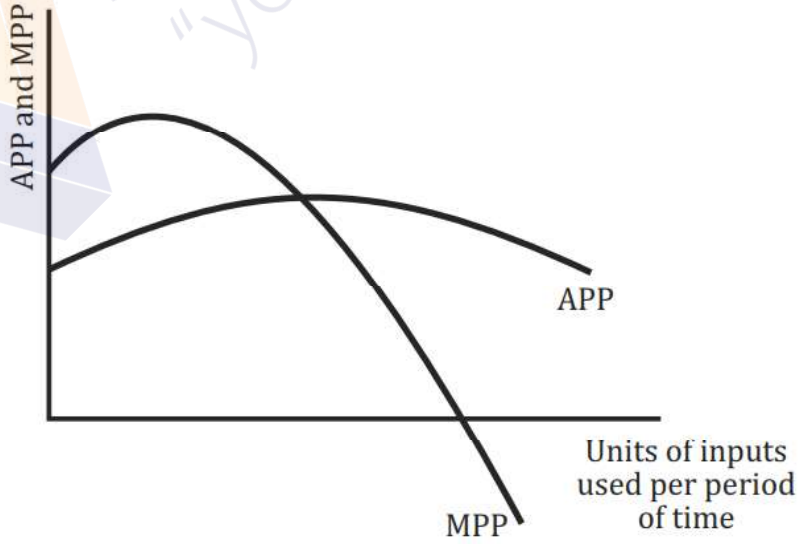


Average product / Average Physical Product (APP)

Average product is total production divided by the number of units of the factor of production. Average product is likely to vary as more of the input factor of production is employed.

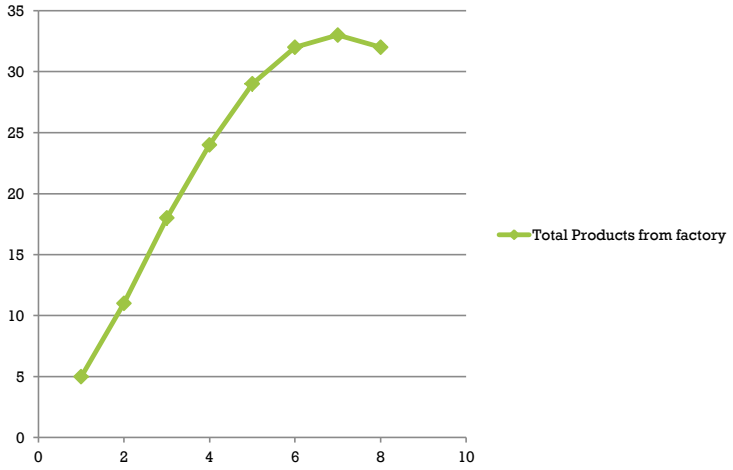
Marginal product / Marginal Physical Product (MPP)

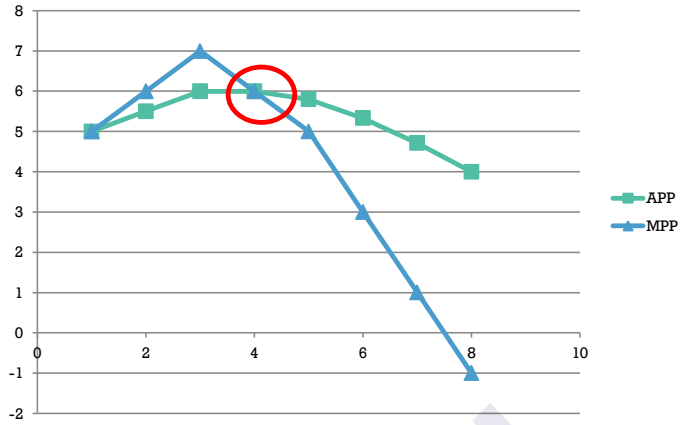
Marginal product or marginal physical product is the change in total output due to a one unit change in the factor input, or the rate of change in total output due to an infinitely small change in the factor input. The marginal product curve can be obtained from the physical product curve.

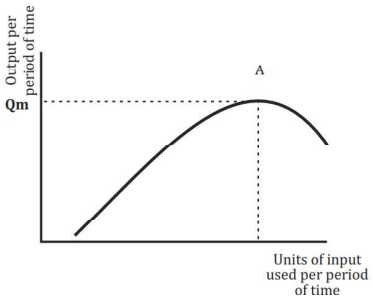


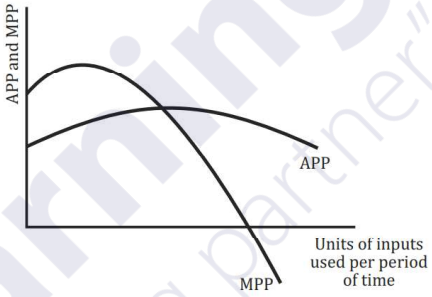
EXERCISE

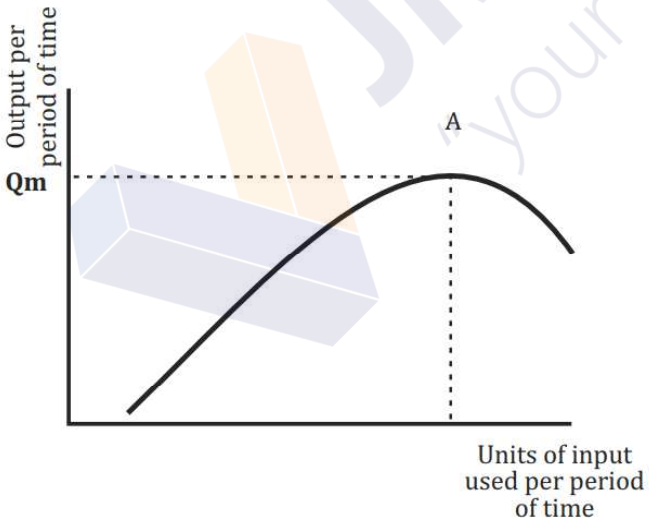
Total Workers Employed (N)	Total Products from factory	Average Product (Per Worker)	Marginal Product per worker
1	5		
2	11		
3	18		
4	24		
5	29		
6	32		
7	33		
8	32		

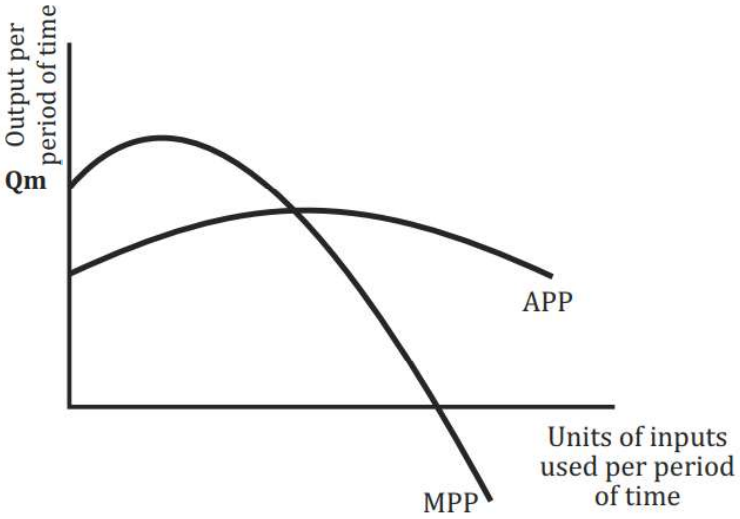












Short run production function

In the short run, at least one factor of production is fixed. The business must therefore stick within a range of production levels, although the actual amount of production can be changed by altering variable inputs. In many situations the quantity of plant and machinery will be fixed and labour and materials can be varied.

Long run production function

In the long run, all factors of production can be varied. How output responds to change in input will be measured by returns to scale.

- Increasing returns to scale - % change in output is greater than the % change in input, imply that the business is benefiting from economies of scale
- Decreasing returns to scale - % change in output is less than the % change in input, mean that diseconomies of scale exist.
- In the long run, businesses will be trying to find the optimum combination of factors of production that reduces unit costs to their lowest level. This may involve substituting machinery and technology for labour.

Law of diminishing marginal returns

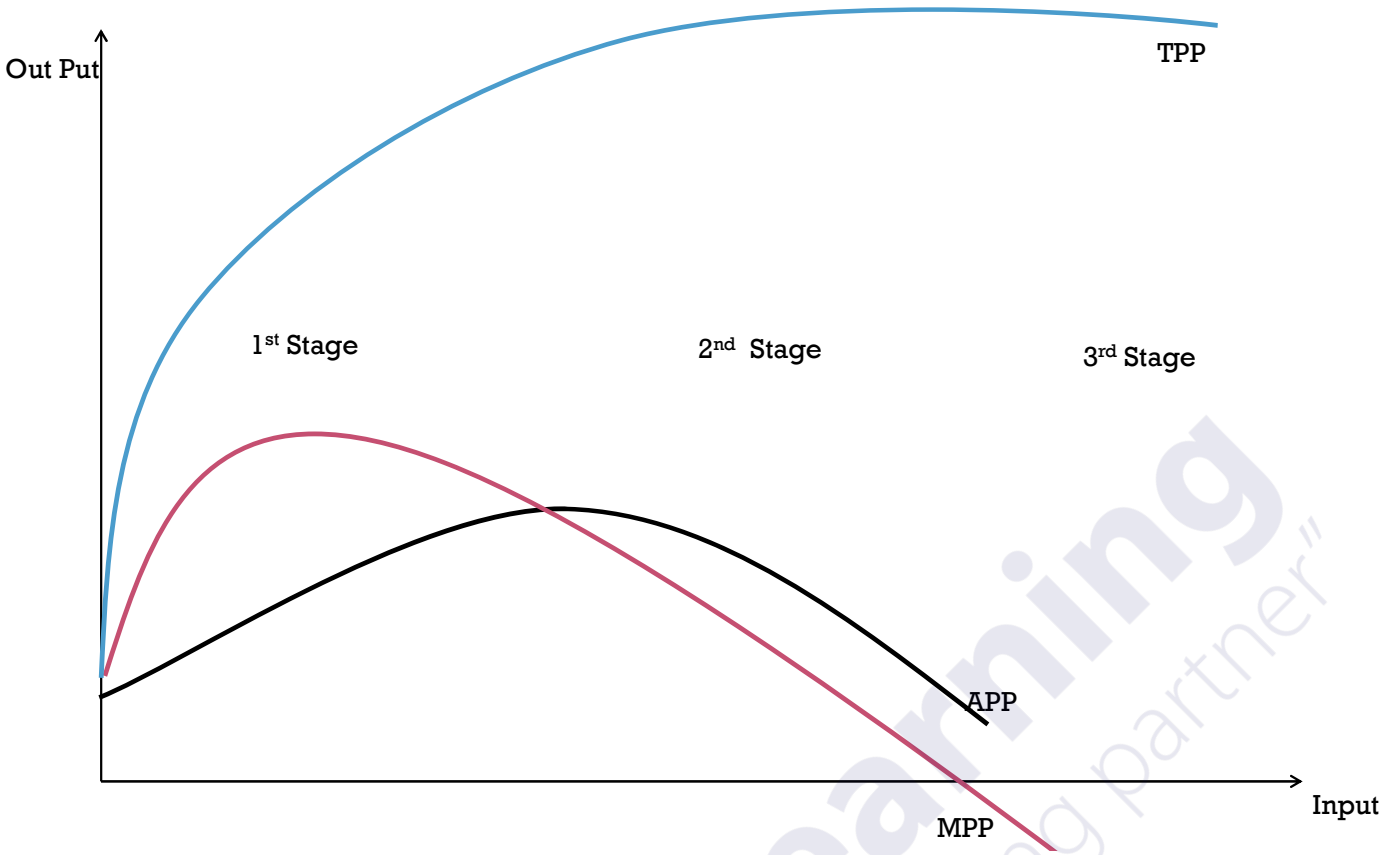
The law of diminishing marginal returns says that in the short run (If one or more factors of production are fixed), but the input of another factor is increased, the extra output generated by each extra unit of input will eventually begin to fall.

Diminishing Marginal return can be broken down to 3 stages of production.

1. Stage one represents the highest period of growth in production. During this stage every additional variable unit of input will result in the production of additional outputs; there are increasing marginal returns in to a certain point and then start to reduce. However Marginal Product is greater than Average Product. The total product and the average product curves will be positive and rising.

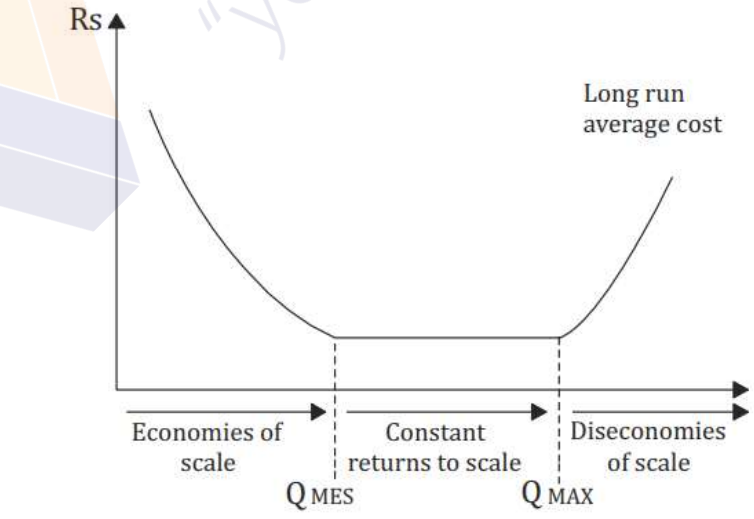
2. In Stage two marginal product is positive but the curve has negative slope (MPP is decreasing). This means that, while each additional variable unit of input will still lead to more units of output, the rate at which this occurs will begin to slow. The increase of outputs for each input will be at a reducing rate. The total product curve (TPP) has a decreasing positive slope. In other words, the slope becomes flatter with each additional unit of variable input. The Average product (APP) is positive and the average product curve has a negative slope.

3. In Stage three, the marginal returns become negative. This means that any additional units of input now result in less overall production. In this final stage, the total product curve will now also begin to fall. The average product curve will continue to drop, while the marginal product curve will become negative



AVERAGE COST IN LONG RUN

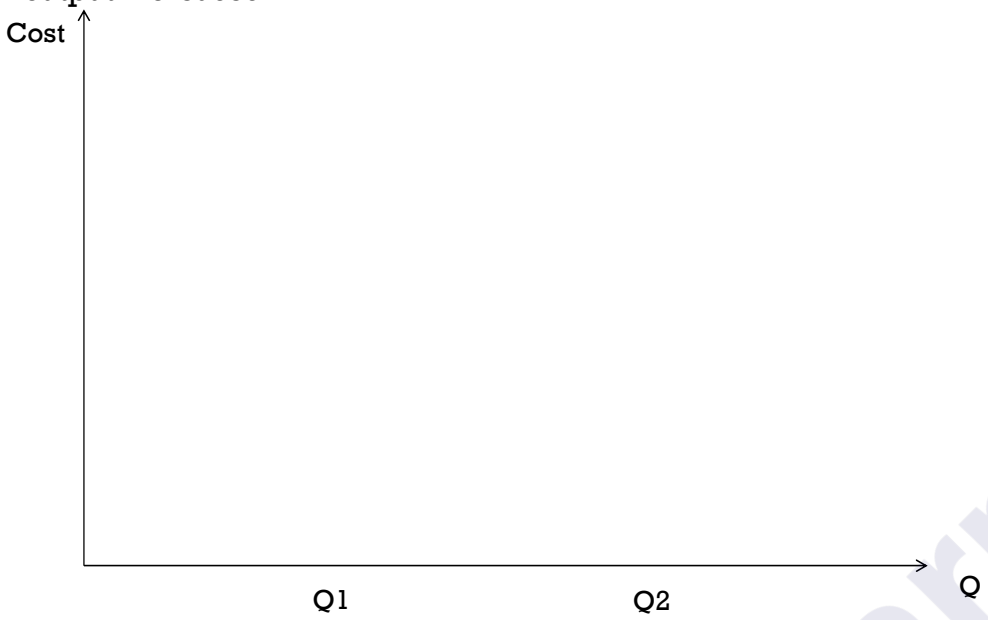
- **Economies of scale**: factors which cause unit cost to decline in the long run as output increases.



Increase Return to scale

Long Run Average Cost (LRAC)

- **Economies of scale**: factors which cause unit cost to decline in the long run as output increases.



- **Minimum Efficient Scale (MES)**
  Given the concept of economies of scale, it is generally accepted that in any industry there is a **minimum efficient scale** of production which is necessary for a firm to achieve the full potential economies of scale

Sources of economies of scale

The economies of scale attainable from large-scale production fall into two categories.

(a) Internal economies

economies arising within the firm from the organisation of production

- **Technical economies – Plant Economies of Scale**
  -
  -
- **Commercial or marketing economies**
  -
  -
  -
  -
- **Organisational economies – Cost of running the business**
  -
  -
  -
- **Financial economies**
  -
  -

(b) External economies

Economies attainable by the firm because of the growth of the industry as a whole. This may occur when the industry will grow.

- **A large skilled labour force is created** and external educational services can be geared towards training new entrants. This saves the firms the costs of training.
- **Specialised ancillary industries** will develop to provide components, transport finished goods, trade in by-products, provide special services and so on. For instance, law firms may be set up to specialise in the affairs of the industry and save the firms the costs of maintaining in-house legal teams. (Law firms, advertising firms, media buying firms, HR firms, IT firms etc.)
- **Government assistance** may be granted to industries that promise large amounts of jobs or export earnings. In recent years, information technology, green energy and biotechnology industries have benefited from this.

Diseconomies of scale

Economic theory predicts that there will be diseconomies of scale in the longrun costs of a firm, once the firm gets beyond an ideal size (Maximum efficient Scale of Production -MES). The main reasons for possible diseconomies of scale are **managerial, human and behavioural problems** of a large firm. In a large firm employing many people, with many levels in the hierarchy of management, there may be a number of undesirable effects.

- Communicating information and instructions may become difficult.
- Chains of command may become excessively long, and management will become too remote, and lose control over operations.
- Morale and motivation amongst staff may deteriorate, and there may be conflicts between different departments which have different objectives.
- Senior management may have difficulty in assimilating all the information they need in sufficient detail to make good quality decisions.
- There may be increased levels of bureaucracy.

1. Which of the following terms describes a situation where a firm can reduce unit costs by offering a wider selection of products?

A External economy of scale

B Economy of increased dimensions

C Financial economy of scale

D Economy of scope

2. Which of the following is an example of an external economy of scale?

A Increased wage costs due to falling unemployment in the region.

B The employment of specialist managers by a firm to cope with higher output levels.

C The extension of low-cost telecommunication links to an area of the country not previously served by such links.

D Cheaper finance in recognition of the firm's increased share of the market and therefore its stability.