

Average fixed cost (AFC)

Average Variable cost (AVC)

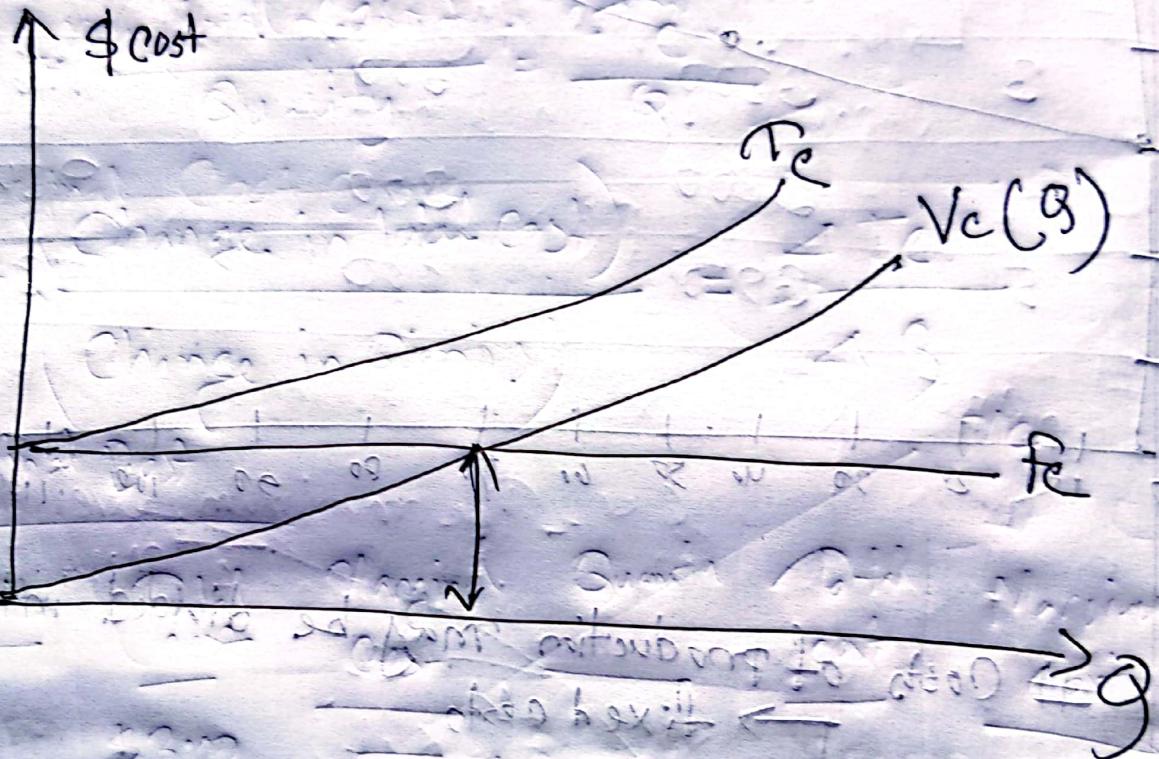
Average Total cost (ATC)

$$ATC = AFC + AVC$$

## Fixed Cost & Variable Cost

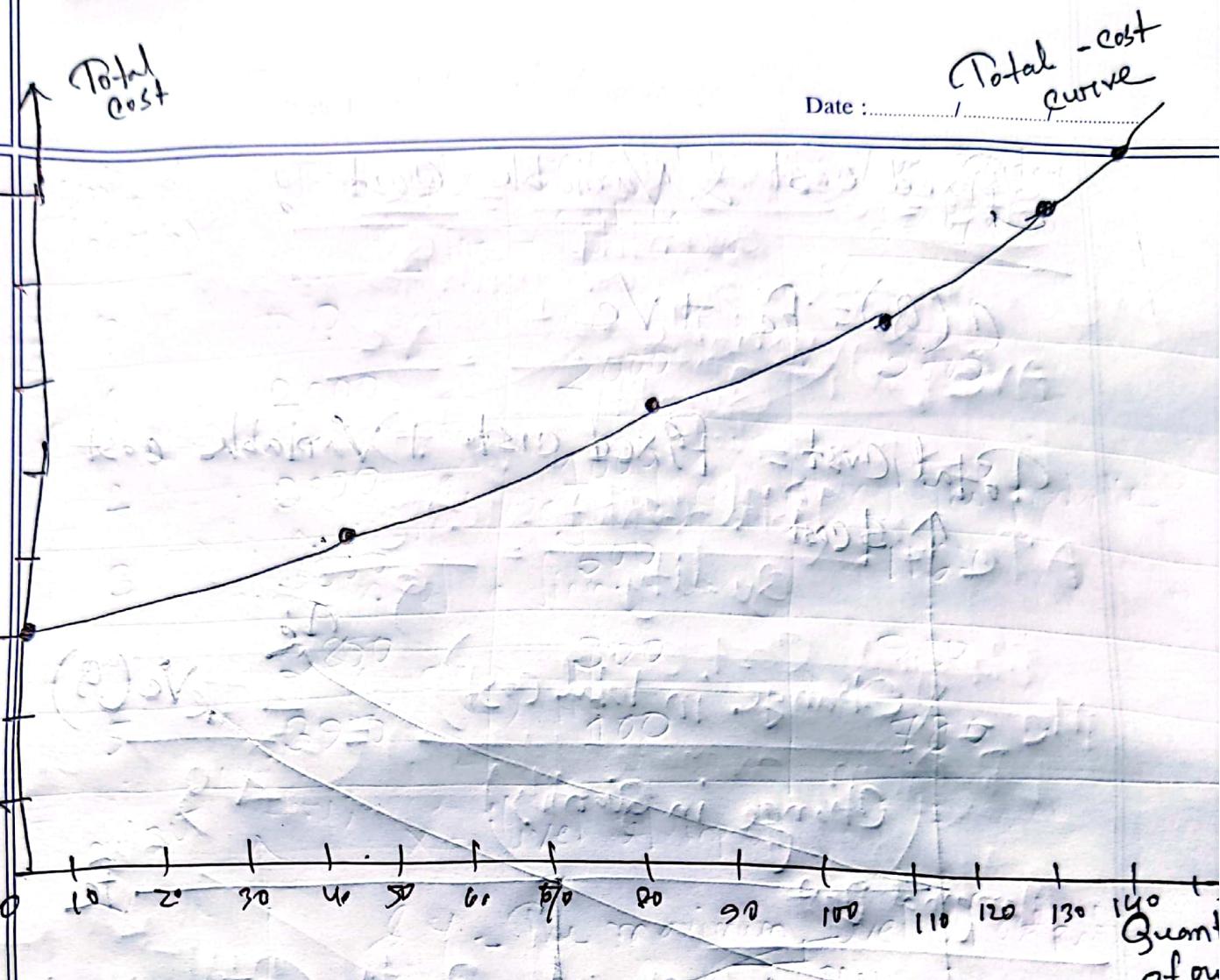
$$C(B) = F_C + V_C$$

Total Cost = Fixed cost + Variable cost



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## By Pracchad



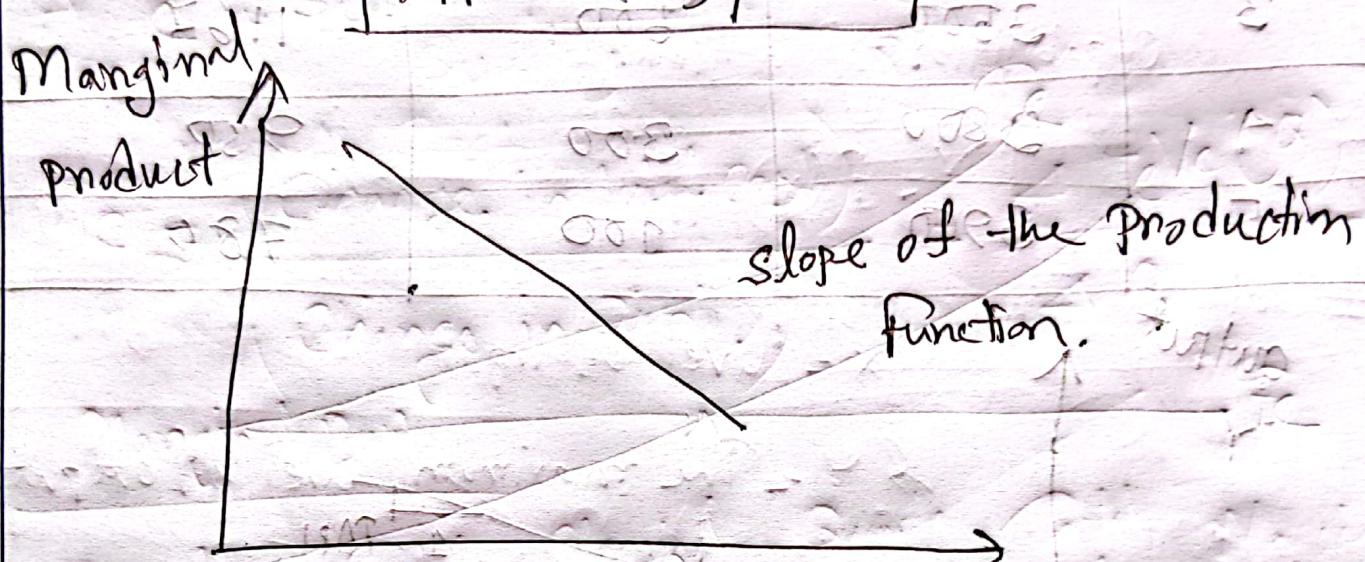
# Costs of production may be divided into

- fixed costs
- variable costs
- do vary with quantity of output produced.

# Marginal Product of Labor (MPL)

\* Marginal Product Curve is downward sloping.

$$MPL = \frac{dQ}{dL}$$



Number of workers	Output	Marginal Product of Labor	Cost of factory	Cost of worker	Total cost (CF + CW)
0	0	-	\$30	\$0	\$30
1	50	50	30	10	40
2	90	40	30	20	50
3	120	30	30	30	60
4	140	20	30	40	70
5	150	10	30	50	80

<u>Units of labor (a)</u>	<u>Total product (b)</u>	<u>Marginal cost (c)</u>	<u>Avg product</u> $d = b/a$
0	0		
1	2000	2000	2000
2	3000	1000	1500
3	3500	500	1167
4	3800	300	950
5	3900	100	780

outPut

Y

MPL

MPL

Q = The maximum level of output

The slope of production of marginal product.

Labor, L

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### Total Product (TP)

↳ is the total amount of output produced in physical units such as bushels of wheat or number of sneakers.

### Marginal Cost (MC)

↳ of an input is extra product or output produced by 1 additional unit.

### Average Product (AP)

Average product of labor or APL

$$APL = Q/L$$

This is the accounting measure of productivity

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# Fundamental of Economics

Date : .....

Topics : 04

Chapter - 13

"The production & costs"

## Production Function

↳ is a useful way of describing the productive capabilities of a firm.

$$Y = f(x)$$

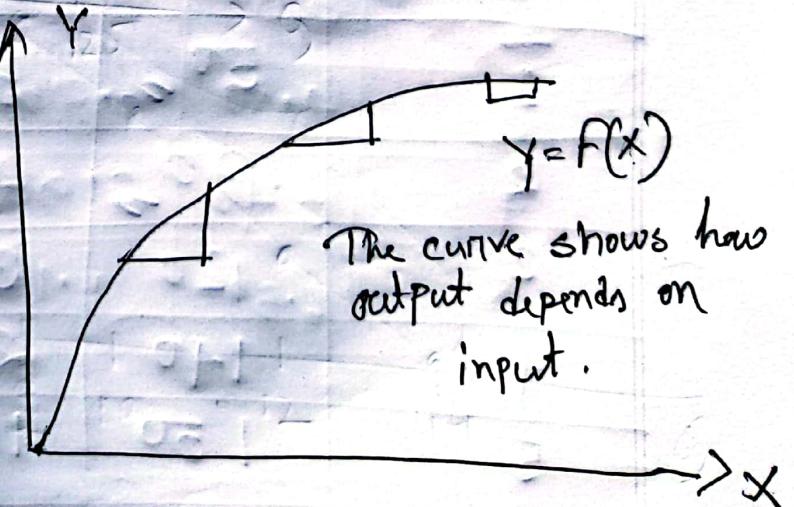
Here,  $x$  = level of input

&  $y$  = The maximum level of output

OR,

$$Y = F(K, L)$$

# This equation states that output is a function of the amount of capital and the amount of labor.



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$$AFC = \frac{\text{Fixed Cost}}{\text{Quantity}} = \frac{Fc}{Q}$$

$$AVC = \frac{\text{Variable cost}}{\text{Quantity}} = \frac{Vc}{Q}$$

$$ATC = \frac{\text{Total Cost}}{\text{Quantity}} = \frac{TC}{Q}$$

$$MC = \frac{\text{(Change in total cost)}}{\text{(Change in quantity)}} = \frac{\Delta TC}{\Delta Q}$$

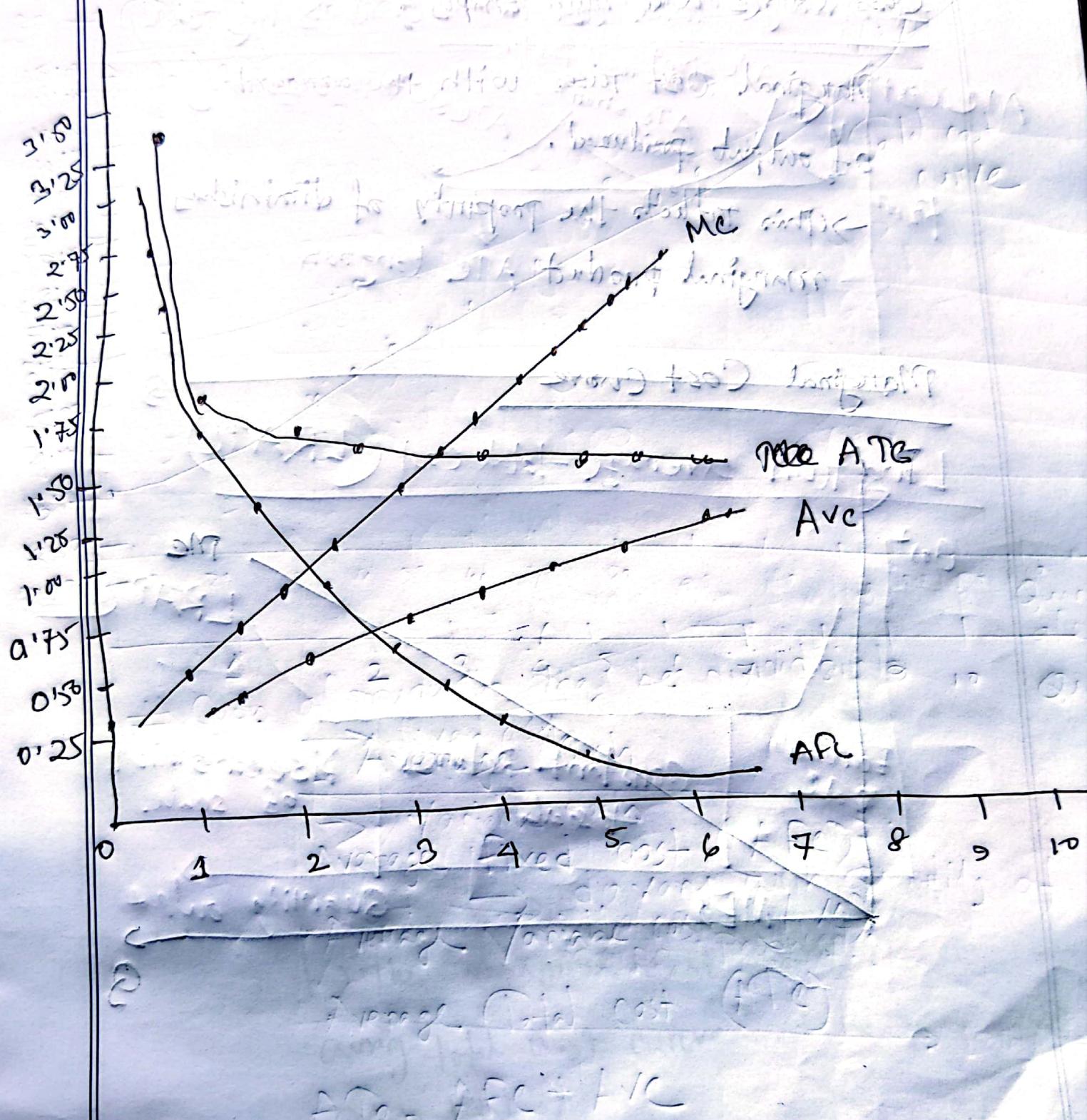
### Marginal Cost

<u>Quantity</u>	<u>Total cost</u>	<u>Marginal cost</u>	<u>Quantity</u>	<u>Total cost</u>	<u>Marginal cost</u>
0	\$3.00	—			
1	\$3.30	\$0.30	6	\$7.80	\$1.30
2	3.80	0.50	7	9.30	1.50
3	4.50	0.70	8	11.00	1.70
4	5.40	0.90	9	12.90	1.90
5	6.50	1.10	10	15.00	2.10

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# Thirsty Thelma's Average Cost and Marginal cost



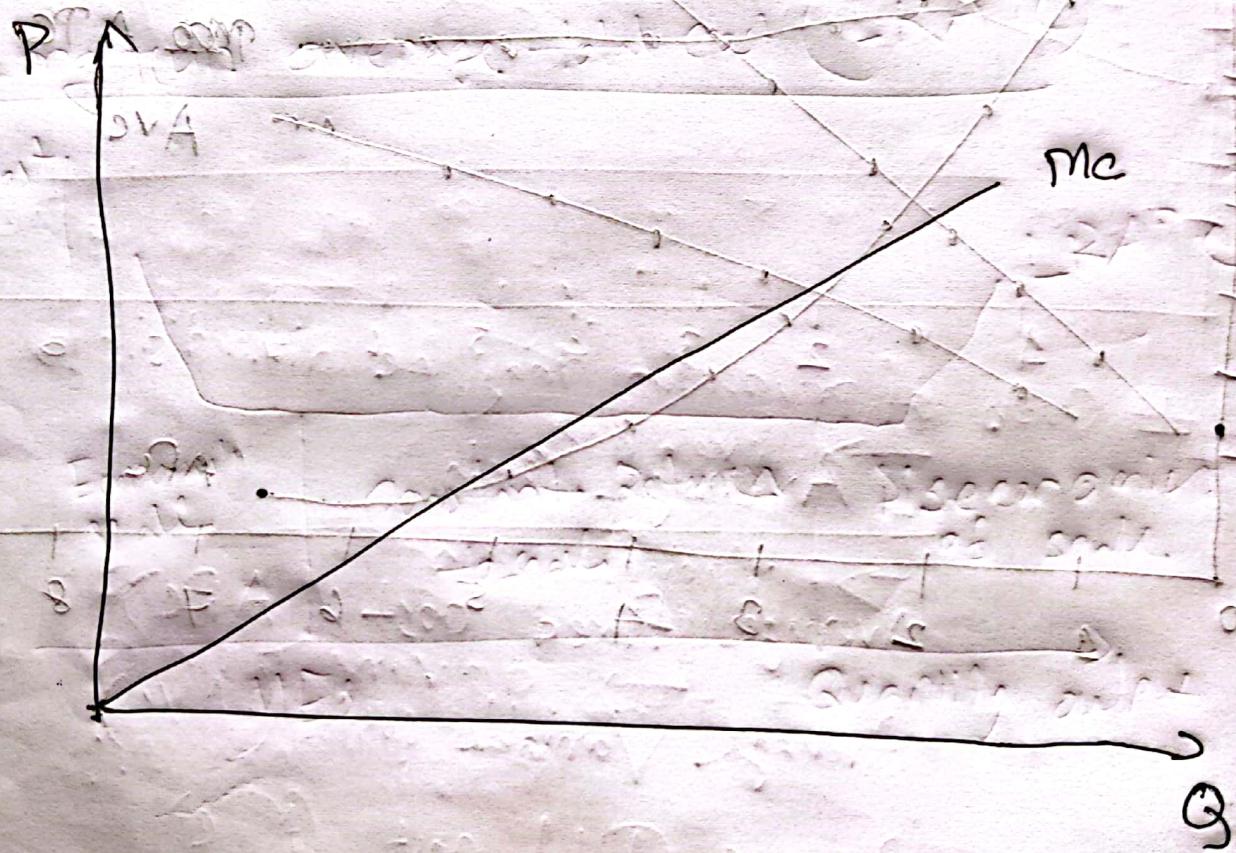
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## Cost Curves and their Shapes:

Marginal Cost rises with the amount of output produced.

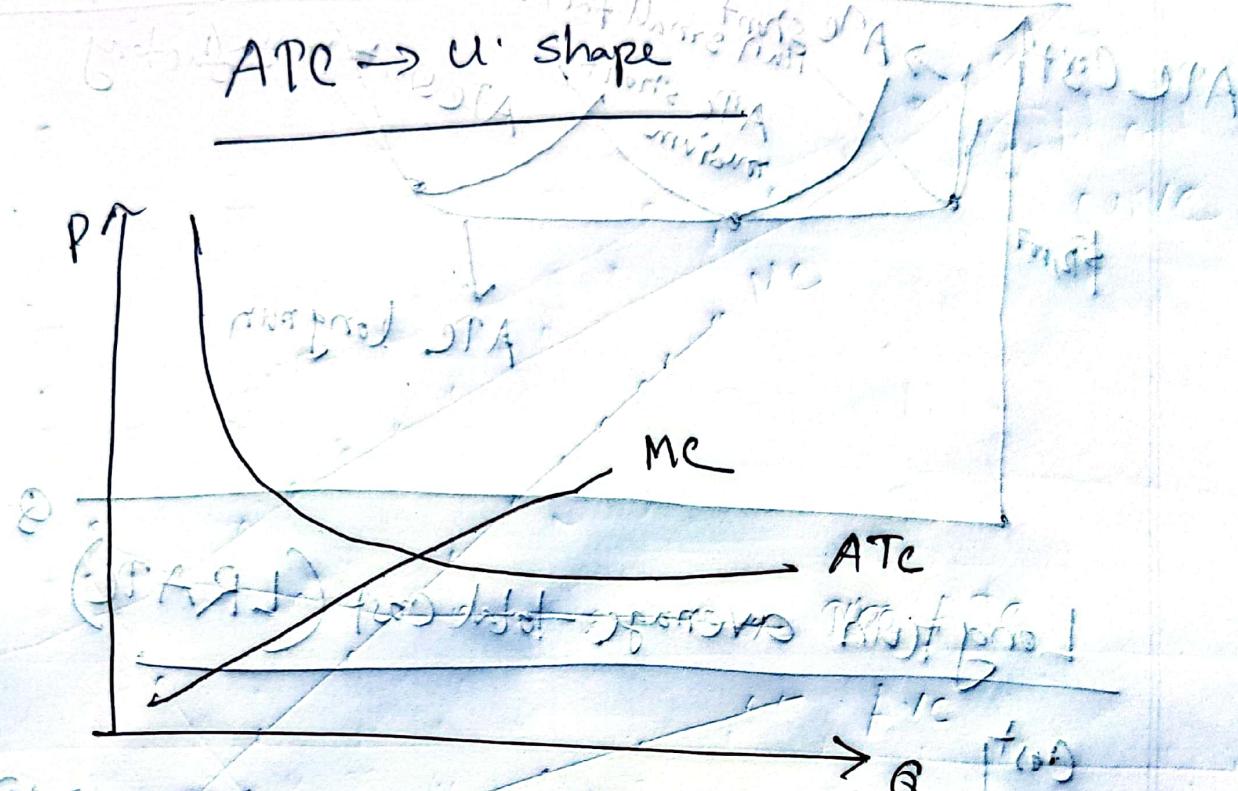
→ This reflects the property of diminishing marginal product.

### Marginal Cost Curve



\* The Avg. total cost curve is U shaped

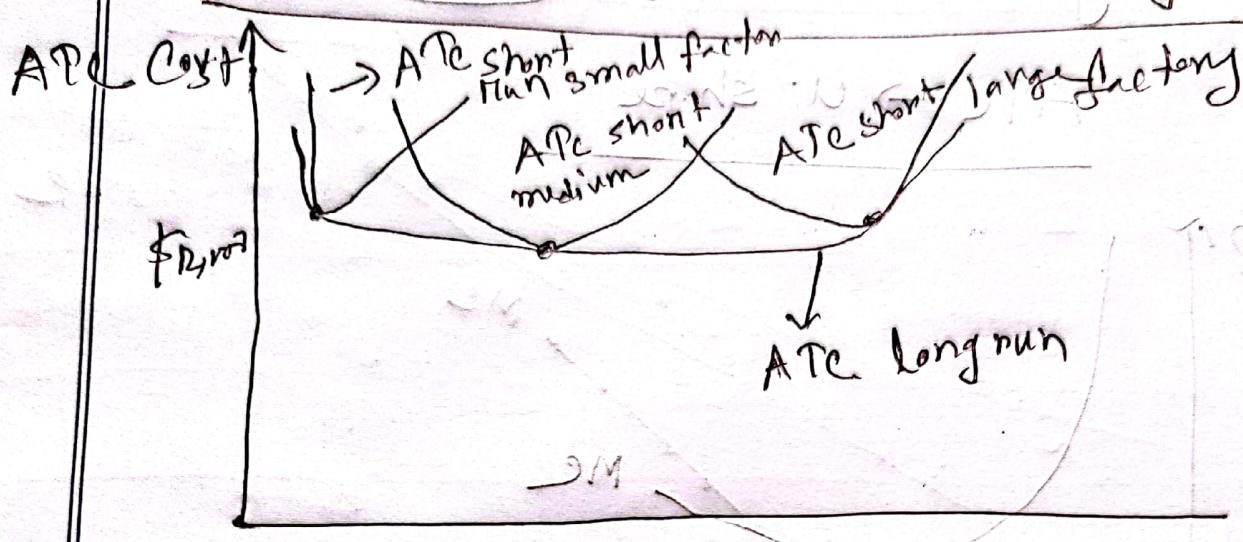
$ATC \rightarrow U$  shape



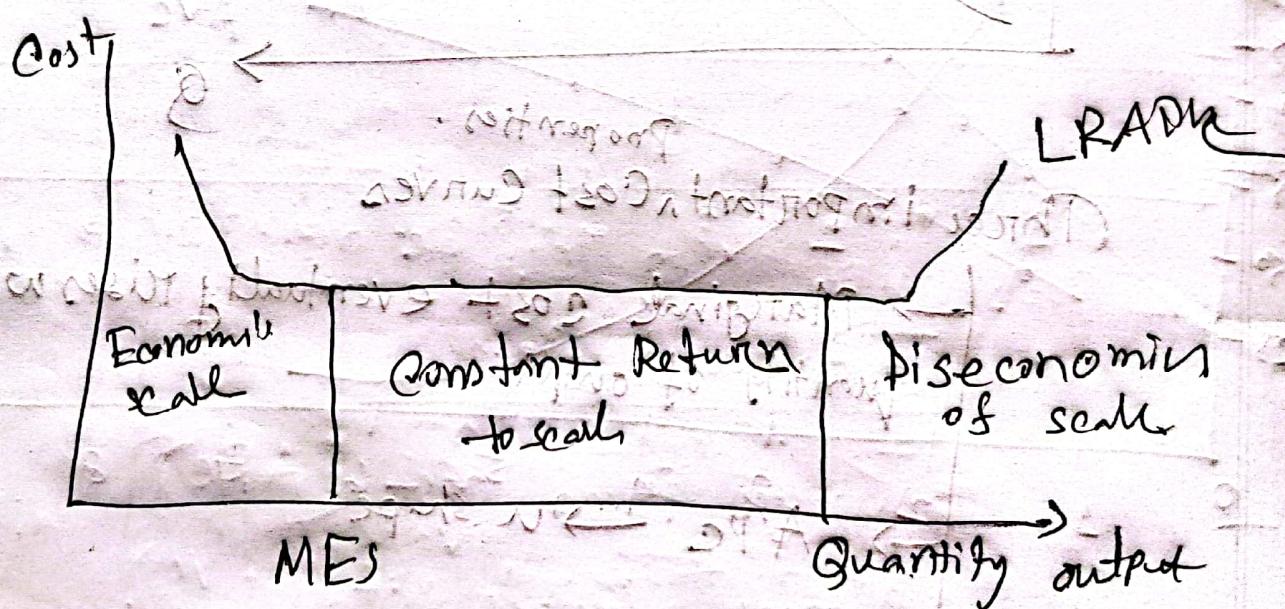
Three important Cost Curves

- Marginal cost eventually rises with the quantity of output
- $ATC \rightarrow U$  shape
- The marginal cost curve crosses the avg. total cost curve at the minimum of avg. total cost

## # Average Total Cost in the short & long run



Long run average total cost (LRATC)



The Firm's objective: (Profit maximization)

→ The economic goal of the firm to maximize profit

Total Revenue:

→ The amount a firm receives for the scale of its output.

Total Cost:

→ The market value of inputs a firm uses in production.

$$\text{Profit} = \text{Total Revenue} - \text{Total cost}$$

Economist View

Accountant View

Economic profit

Implicit cost

Explicit cost

Total opportunity cost

Accounting profit

Explicit costs