ECO101- Introduction to Microeconomics

Lecture-14

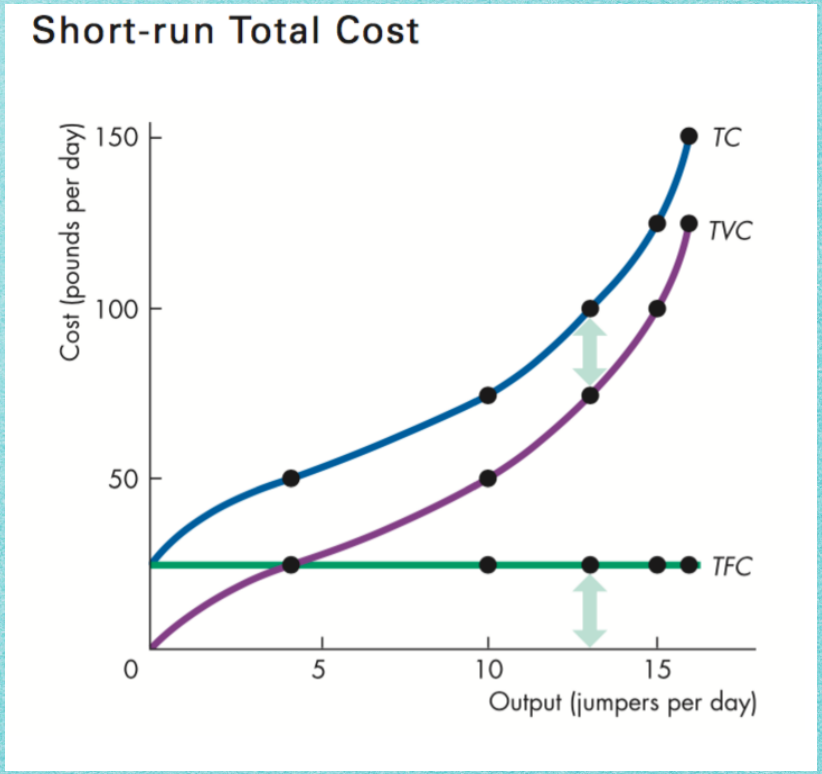
Short-run Costs

- Short-run costs can be distinguished in three different categories:

1. Total Cost (TC)- Cost of all factors of production.
   TC= TFC + TVC

2. Total Fixed Cost (TFC)-
   Cost of firm's fixed factors

3. Total Variable Cost (TVC)-
   Cost of firm's variable inputs
   e.g. Labour wage



Short-run costs- MC

- Marginal Cost (MC)- Change in Total Cost (TC) resulting from a one-unit increase in output. Marginal Cost. Formula:

$$MC = \frac{\Delta TC}{\Delta Q}$$

- Example- Output of shirts increase from 10 to 13 units and TC increases from 75tk to 100tk. Calculate the MC?

Short-run costs- AC

- Average Cost (AC)- Cost per unit of output and can be distinguished in three categories:

1. Average Fixed Cost (AFC)- Total fixed cost per unit of output. Firms decide to produce where ATC is the lowest

2. Average Variable Cost (AVC)- Total variable cost per unit of output

3. Average Total Cost (ATC)- Total cost per unit of output. Firms decide to produce where ATC is the lowest

$$\frac{TC}{Q} = \frac{TFC}{Q} + \frac{TVC}{Q}$$

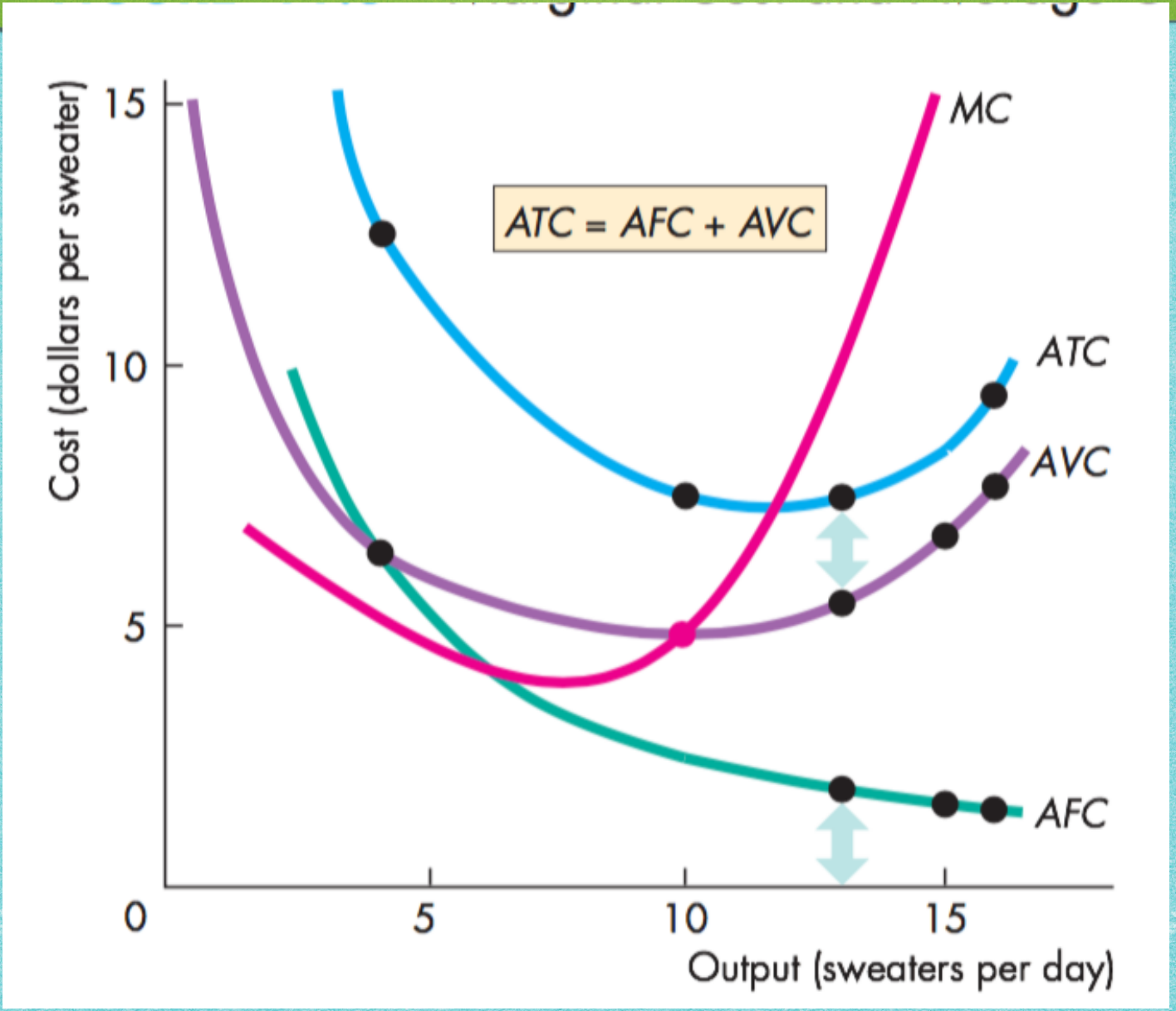
or:

$$ATC = AFC + AVC$$

Short-run cost curves

	Labor (workers per day)	Output (sweaters per day)	Total fixed cost (*TFC*)	Total variable cost (*TVC*)	Total cost (*TC*)	Marginal cost (*MC*)	Average fixed cost (*AFC*)	Average variable cost (*AVC*)	Average total cost (*ATC*)
			(dollars per day)			(dollars per additional sweater)	(dollars per sweater)		
A	0	0	25	0	25		—	—	—
						..... 6.25			
B	1	4	25	25	50		6.25	6.25	12.50
						..... 4.17			
C	2	10	25	50	75		2.50	5.00	7.50
						..... 8.33			
D	3	13	25	75	100		1.92	5.77	7.69
						.....12.50			
E	4	15	25	100	125		1.67	6.67	8.33
						.....25.00			
F	5	16	25	125	150		1.56	7.81	9.38

Shapes of the cost curves



Let's do it together !

- Find the MC and ATC from the provided information in the table below AND graphically illustrate the MC and AC curves

Quantity of cars	Total Cost (TC)	Marginal Cost (MC)	Average Total Cost (ATC)
0	BDT500		
1	BDT540		
2	BDT560		
3	BDT570		
4	BDT590		
5	BDT620		
6	BDT660		
7	BDT720		
8	BDT800		
9	BDT920		
10	BDT1,100		

Why marginal cost decreases initially AND then increases eventually

- MC decreases in the beginning at initial level output due to specialisation.
- And then MC eventually increases with higher level of output due to ***law of diminishing returns*** which states that each additional labour after a certain point produces smaller output per labour and since for higher output more labours are required— the MC cost rises eventually.

Long-run Costs

- In the S-r, firm has variable cost of Labour and fixed cost of Capital. But in the L-r, firm can vary both. Therefore, **in L-r, all costs are variable**

- Behaviour of L-r cost curves depends on firm's **Production Function**- which shows the relationship between the maximum output attainable and the quantities of both labour & capital

L-r Production Function

- The L-r Production Function represents :

A. **Diminishing Returns-** As labour increases marginal product of labour eventually decreases

B. **Diminishing Marginal Product of Capital**- Change in output due to a one-unit increase in quantity of capital increased

The Production Function

Labour (workers per day)	Output (jumpers per day)			
	Plant 1	Plant 2	Plant 3	Plant 4
1	4	10	13	15
2	10	15	18	21
3	13	18	22	24
4	15	20	24	26
5	16	21	25	27
Knitting machines (number)	1	2	3	4

Long-run Average Cost Curve (LRAC)

- The LRAC shows the relationship between the lowest attainable **Average Total Cost (ATC) and Output,** when both the plant size and capital can be varied

- It is a planning curve and it is a guide to a firm, as it can say what quantity of labour and what should be the size of the firm to minimise cost

Economies and Diseconomies of Scale

- Economies of Scale are features of a firm's technology that makes Average Total Cost (ATC) fall as output increases. It is when LRAC curve is downward sloping. Economies of scale can be attained by greater **specialisation** of Labour & Capital.

- Diseconomies of Scale arises when a firm's technology makes ATC rise as output increases. LRAC in this case is upward sloping. For example- the challenge of maintaining a large enterprise is the lack of specialisation

- Constant Economies of Scale is when ATC is constant as out put increases. LRAC curve is horizontal or flat here

Essential Readings for Today!

Economics. Parkin, Powell & Matthews.
8th Edition.

Chapter-10, pages- 227-234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