

3. HOTS & Applications

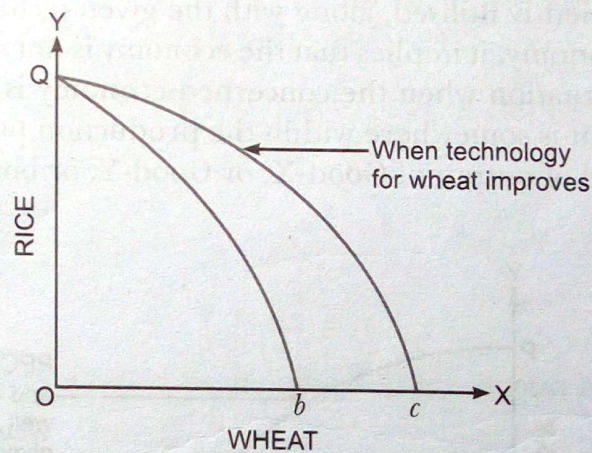
1. If production possibility curve shifts to the right, should it be parallel to the old one?

Ans. Not necessarily, because slope of PPC indicates marginal opportunity cost, which may be different at different levels of output.

2. If PPC relates to wheat and rice (on the X-axis and Y-axis respectively) draw diagram showing change in PPC when resources remain constant and technology improves only for wheat.

Ans. See Fig. 4, here PPC will not shift but rotate to the right showing more production of wheat from O_b to O_c when all resources are employed in the production of wheat. Production of rice remains constant at OQ corresponding to zero output of wheat when production of wheat is zero.

FIGURE 4



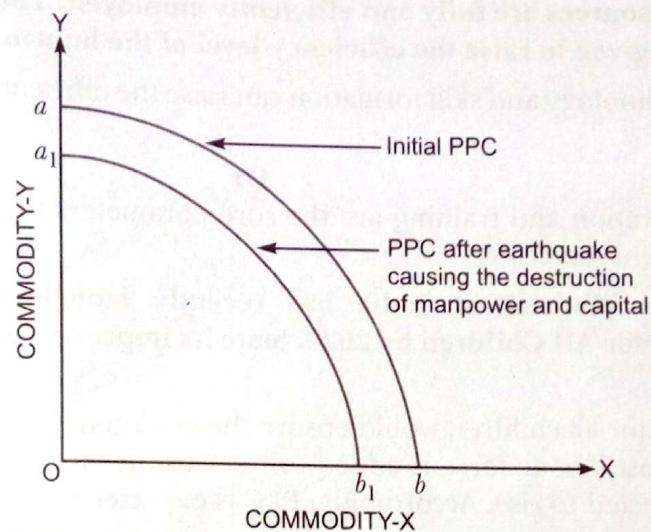
3. What does increasing marginal opportunity cost along a PPC mean?

Ans. Increasing marginal opportunity cost along a PPC means that $\frac{\text{Loss of Y}}{\text{Gain of X}}$ tends to increase as more and more of resources are shifted from Y to X, which is why PPC is concave to the origin. It occurs because resources are use-specific. As these are shifted from a more specialised use to a less specialised use, loss of output tends to be higher than the gain of output.

4. A lot of people have died and many industrial units have been razed to the ground owing to a massive earthquake in Nepal. How will it affect the country's PPC? Explain diagrammatically.

Ans. Production possibility curve (or PPC) is drawn on the assumption of a given amount of resources. Destruction of manpower and industrial capital of the country leads to a massive fall in the quantum of resources. Accordingly, PPC will shift to the left, as in Fig. 5.

FIGURE 5



5. Giving reason, comment on the shape of production possibility curve based on the following schedule. Also, find the marginal opportunity cost of producing Good-1.

| | | | | | | |
|----------------|----|----|----|----|---|---|
| Good-1 (units) | 0 | 1 | 2 | 3 | 4 | 5 |
| Good-2 (units) | 25 | 20 | 15 | 10 | 5 | 0 |

Ans.

| Good-1 (units) | Good-2 (units) | Marginal Opportunity Cost |
|----------------|----------------|---------------------------|
| 0 | 25 | — |
| 1 | 20 | $\frac{5}{1} = 5$ |
| 2 | 15 | $\frac{5}{1} = 5$ |
| 3 | 10 | $\frac{5}{1} = 5$ |
| 4 | 5 | $\frac{5}{1} = 5$ |
| 5 | 0 | $\frac{5}{1} = 5$ |

The above schedule shows that the marginal opportunity cost of producing more of Good-1 in place of Good-2 is constant. Accordingly, production possibility curve should be a downward sloping straight line.

4. Multi-disciplinary & Evaluation (Value-based Questions)

1. If resources are scarce, how do you explain massive unemployment in India?

Ans. Factors of production are always jointly used. Labour is combined with capital (say machine). In India, there is a severe shortage of capital. In the absence of capital, labour alone cannot be used. Hence, labour remains unemployed.

2. A country's resources are fully and efficiently employed. The problem of scarcity exists. What advice will be given to raise the efficiency level of the human resources to fight scarcity?

Ans. Use of new technology and skill formation can raise the efficiency level of human resources to fight scarcity.

Or

Spread of education and training are the core parameters to raise the efficiency level of human resources to fight scarcity.

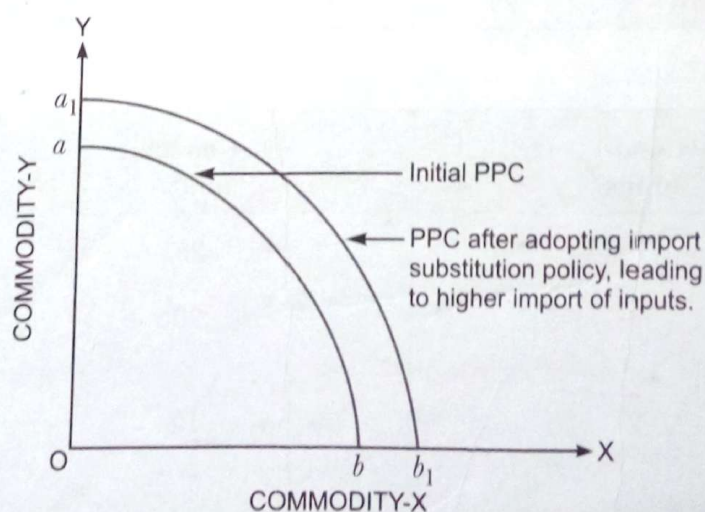
3. Union Health Minister of India has recently launched 'Mission Indradhanush': Full Immunization for All Children by 2020. State its impact on production possibility curve of the economy.

Ans. Immunization for all children would ensure the emergence of robust labour force in the country. When the robust labour force is added to the existing stock of manpower, resource-pool of the country is expected to rise. Accordingly, PPC is expected to shift to the right.

4. What is the likely impact of import substitution policy on the PPC relating to domestic production? Illustrate diagrammatically.

Ans. Import substitution means producing goods in the domestic economy which are being imported from rest of the world. Assuming that now inputs are imported in place of final goods, resource-pool of the domestic economy would rise. Accordingly, PPC would shift to the right, as in Fig. 6.

FIGURE 6



NUMERICALS

1. Suppose that you choose the science subjects. You had two other options: the arts subjects (A) or the commerce subjects (C). If you would have chosen (A), you would have expected a career, offering you ₹ 4 lakh annually; if you would have chosen (C), you would have expected a career, giving you ₹ 5 lakh annually. What is your opportunity cost of choosing the science subjects?

Sol. Opportunities: A : Arts; Value = ₹ 4 lakh

C : Commerce; Value = ₹ 5 lakh

Opportunity cost of choosing science = ₹ 5 lakh, because opportunity cost is the loss of value of next best alternative.

2. Find marginal rate of transformation, given the following information:

| Output of Shirts | Output of Shoes |
|------------------|-----------------|
| 200 | 200 |
| 160 | 220 |

Sol. Marginal rate of transformation = $\frac{\text{Loss of output of shirts}}{\text{Gain of output of shoes}}$

$$= \frac{40}{20} = 2.$$

3. Find marginal opportunity cost of Good-1 when production of Good-1 increases from 10 units to 15 units while the production of Good-2 decreases from 500 units to 100 units.

Sol. Marginal opportunity cost = $\frac{\text{Loss of production of Good-2}}{\text{Gain of production of Good-1}}$
 $= \frac{400}{5} = 80.$

4. An economy produces two goods: watches and shoes. The following table summarises its production possibilities. Calculate the marginal opportunity costs of watches at various combinations.

| Watches (in millions) | Shoes (in thousands) |
|--------------------------|-------------------------|
| 0 | 90,000 |
| 1 | 80,000 |
| 2 | 68,000 |
| 3 | 52,000 |
| 4 | 34,000 |
| 5 | 10,000 |

Sol. Marginal opportunity cost = $\frac{\text{Loss of output of shoes}}{\text{Gain of output of watches}}$

| Watches | Shoes | Marginal Opportunity Cost |
|---------|--------|---|
| 0 | 90,000 | — |
| 1 | 80,000 | Loss = 90,000 - 80,000 = 10,000; Gain = 1 - 0 = 1, Marginal Opportunity Cost = $\left(\frac{\text{loss of output}}{\text{gain of output}} \right)$ $= \frac{10,000}{1} = 10,000 \text{ Shoes}$ |
| 2 | 68,000 | Loss = 80,000 - 68,000 = 12,000; Gain = 2 - 1 = 1, Marginal Opportunity Cost = $\left(\frac{\text{loss of output}}{\text{gain of output}} \right)$ $= \frac{12,000}{1} = 12,000 \text{ Shoes}$ |
| 3 | 52,000 | Loss = 68,000 - 52,000 = 16,000; Gain = 3 - 2 = 1, Marginal Opportunity Cost = $\left(\frac{\text{loss of output}}{\text{gain of output}} \right)$ $= \frac{16,000}{1} = 16,000 \text{ Shoes}$ |
| 4 | 34,000 | Loss = 52,000 - 34,000 = 18,000; Gain = 4 - 3 = 1, Marginal Opportunity Cost = $\left(\frac{\text{loss of output}}{\text{gain of output}} \right)$ $= \frac{18,000}{1} = 18,000 \text{ Shoes}$ |
| 5 | 10,000 | Loss = 34,000 - 10,000 = 24,000; Gain = 5 - 4 = 1, Marginal Opportunity Cost = $\left(\frac{\text{loss of output}}{\text{gain of output}} \right)$ $= \frac{24,000}{1} = 24,000 \text{ Shoes}$ |

5. Find the marginal opportunity cost. Also, draw the PPC, from the given information.

| | | | | | | |
|--------------------------|-------|-----|-----|-----|-----|-----|
| Production of Wheat (kg) | 1,000 | 900 | 700 | 400 | 100 | 0 |
| Production of Rice (kg) | 0 | 250 | 500 | 750 | 850 | 870 |

Sol.

| Production of Wheat (kg) | Production of Rice (kg) | Marginal Opportunity Cost |
|--------------------------|-------------------------|---------------------------|
| 1,000 | 0 | — |
| 900 | 250 | $\frac{100}{250} = 0.4$ |
| 700 | 500 | $\frac{200}{250} = 0.8$ |
| 400 | 750 | $\frac{300}{250} = 1.2$ |
| 100 | 850 | $\frac{300}{100} = 3$ |
| 0 | 870 | $\frac{100}{20} = 5$ |

FIGURE 16

