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Introduction to Economics

Illustration 3. A country produces two goods: green chilly and sugar. Its production possibilities are shown in the following table. Plot the *PPC* on a graph paper and verify that it is concave to the origin. What is the pattern in the table that give rise to the concave shape of the *PPC*?

Possibilities	Green Chilli (Units)	Sugar (kg)
<i>A</i>	22	0
<i>B</i>	16	1
<i>C</i>	11	2
<i>D</i>	7	3
<i>E</i>	4	4
<i>F</i>	2	5
<i>G</i>	1	6

Solution. Marginal opportunity cost = $\frac{\text{Amt. of Green Chilli given up}}{\text{Amt. of Sugar gained}} = \text{MRT}$

MRT or Marginal Opportunity Cost along the *PPC*

Sugar (X)	Green Chilli (Y)	Marginal opportunity cost of sugar (in green chilli) = $\frac{\Delta \text{ in green chilli}}{\Delta \text{ in sugar}} = \text{MRT}$
0	22	—
1	16	6Y : 1X
2	11	5Y : 1X
3	7	4Y : 1X
4	4	3Y : 1X
5	2	2Y : 1X
6	1	1Y : 1X

Plot the good sacrificed on the y-axis and the good gained on the x-axis.

ABCDEF in fig. 1.10, is the production possibility curve. It is concave to the origin. It is concave to origin because marginal opportunity cost is increasing, i.e., slope of *PPC* is increasing.

Important Note:

Increasing slope means that *PPC* is concave to the origin.

On a concave production possibility curve, opportunity cost of producing more units of good *X* in terms of good *Y* given up will always increase. In other words, as one more unit of good *X* is produced then greater quantity of good *Y* has to be sacrificed. If marginal opportunity cost or *MRT* values were **decreasing**, *PPC* will be **convex**. If marginal opportunity cost or *MRT* values were **constant**, then *PPC* will be a **straight downward sloping line**. It is shown in the Fig. 1.11.

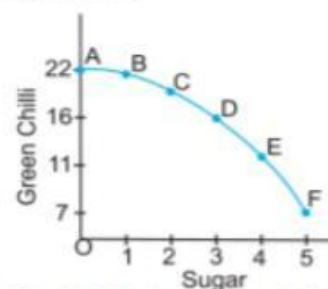


Fig. 1.10 Production Possibility Curve

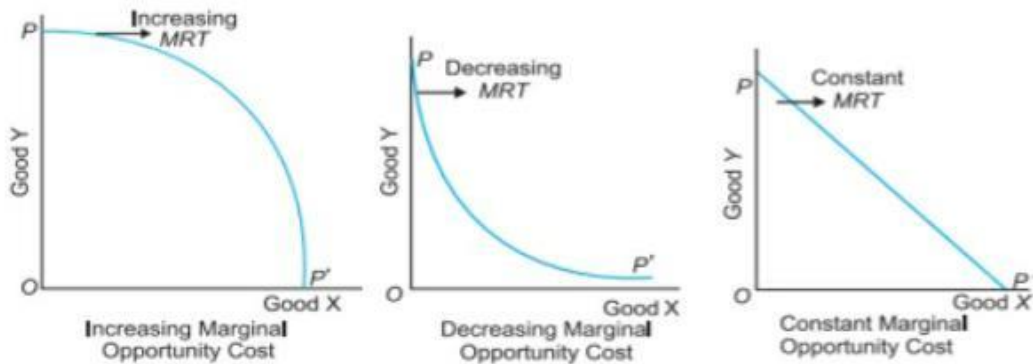


Fig. 1.11 Shape of *PPC* with Different Marginal Opportunity Costs

Illustration 4. An economy produces two goods *X* and *Y*. Its production possibilities are given in the following table. Plot *PPC* and calculate marginal opportunity cost of good *Y*.

Production Possibility	Good Y	Good X
<i>A</i>	30	0
<i>B</i>	25	1
<i>C</i>	20	2
<i>D</i>	15	3
<i>E</i>	10	4
<i>F</i>	5	5
<i>G</i>	0	6

Solution. Marginal opportunity cost = $\frac{\text{Amt. of good Y given up}}{\text{Amt. of good X gained}}$

Marginal Opportunity Cost

Good Y	Good X	MRT or Marginal opportunity cost = $\frac{\Delta Y}{\Delta X}$
30	0	—
25	1	5Y: 1X
20	2	5Y: 1X
15	3	5Y: 1X
10	4	5Y: 1X
5	5	5Y: 1X
0	6	5Y: 1X

Illustration 5. Suppose you have to practice question answers for two subjects: Mathematics and Social Science. You have 8 hours to study. You are very good at answering multiple choice questions in mathematics: 20 questions per hour, while you are not that good in answering such questions in social science: 12 questions per hour. Derive your production possibility schedule and plot it.

Solution.

Production Possibility Schedule

Mathematics Questions Practised	Social Science Questions Practised
0 Questions	12 Questions × 8 Hours = 96 Questions
20 Questions	12 Questions × 7 Hours = 84 Questions
40 Questions	12 Questions × 6 Hours = 72 Questions
60 Questions	12 Questions × 5 Hours = 60 Questions
80 Questions	12 Questions × 4 Hours = 48 Questions
100 Questions	12 Questions × 3 Hours = 36 Questions
120 Questions	12 Questions × 2 Hours = 24 Questions
140 Questions	12 Questions × 1 Hours = 12 Questions
160 Questions	12 Questions × 0 Hours = 0 Questions

Illustration 6. Suppose a student has four hours in which he can either study or play tennis. What is the opportunity cost of studying?

Solution. Opportunity cost of studying is tennis not played.

Illustration 7. An individual has ₹ 164. With this he can eat in a restaurant or buy his favourite book. He buys his favourite book for ₹ 164. What is the opportunity cost of buying the book?

Solution. Opportunity cost of buying book is food not eaten in the restaurant.