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Isoquant and isocost line

Concept of Isoquant:

An isoquant shows various combinations of two factors that will enable a producer to produce a same level of output. In other words, each point of an isoquant will represent a technology and as we move from one point to another on an isoquant we switch across technologies.

An isoquant, therefore, depicts all the technological possibilities graphically and show a substitution between two factors while keeping the output same.

As such, an isoquant represents one specific level of output or for each level of output there will be an isoquant

Definitions of Isoquant:

An isoquant shows alternative combinations of the two factors, each of which enables to produce a same quantity of output. Defining differently, an isoquant is the contour of all the combination of two factors that give rise to a same level of output.

In the words of Cohen and Cyert, an iso-product curve is a curve along which the maximum achievable production is constant

According to Salvatore, isoquant shows the different combinations of two inputs that a firm can use to produce a specific quantity of output.

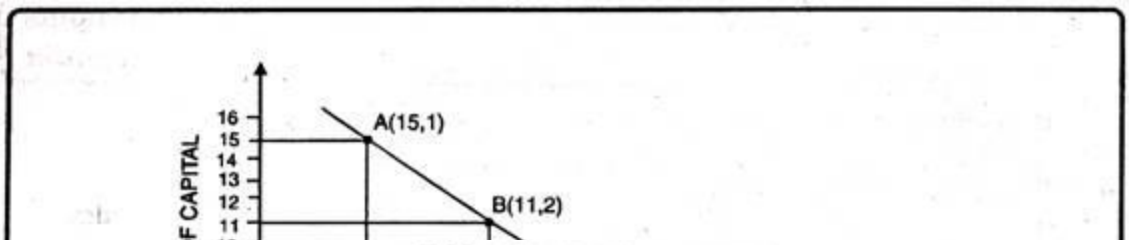


Table 1. Iso-Product Schedule.

Combination	Units of labour	Units of capital	Output of cloth (metres)
A	1	15	200
B	2	11	200
C	3	8	200
D	4	6	200
E	5	5	200

The table 1 shows that the five combinations of labour units and units of capital yield the same level of output, i.e., 200 metres of cloth. Thus, 200 metre cloth can be produced by combining.

(a) 1 units of labour and 15 units of capital

(b) 2 units of labour and 11 units of capital

(c) 3 units of labour and 8 units of capital

(d) 4 units of labour and 6 units of capital

(e) 5 units of labour and 5 units of capital

From the above schedule iso-product curve can be drawn with the help of a diagram. An. equal product curve represents all those combinations of two inputs which are capable of producing the same level of output. The Fig. 1 shows the various combinations of labour and capital which give the same amount of output. A, B, C, D and E.

Characteristics of an Isoquant:

Basic characteristics of an isoquant are same as that of an indifference, hence, they are discussed briefly with regard to an isoquant below

1. Slopes Downwards from Left to the Right:

An isoquant slopes downward from left to right or is negatively sloped, such a shape implies that if a firm employs more of labour, it will employ less of capital or vice versa, in order to maintain the level of output.
Such a shape of isoquant also means that the marginal factor productivities are positive, that is more of a factor will make a positive contribution in production and less of other factor will make a negative contribution.

2. convex to the Point of Origin:
This characteristic of isoquant means that the producer is willing to sacrifice fewer and fewer units of capital for every additional unit of labour and vice versa.

3. Higher Isoquant Denotes a Higher Level of Output:

Another basic characteristic of an isoquant is that greater its distance from the point of origin, higher output level it will represent. This shows that a higher isoquant will represent a higher level of output vis-a-vis a lower isoquant.

4. Two Isoquants Never Intersect Each Other:
Two isoquants representing different levels of output can never intersect. If they do so, it will produce an absurd result.

Isocost line

An isocost line is a graphical representation of various combinations of two factors (labor and capital) which the firm can afford or purchase with a given amount of money or total outlay. It is an important tool for determining what combination of factor-inputs the firm will choose for production process.

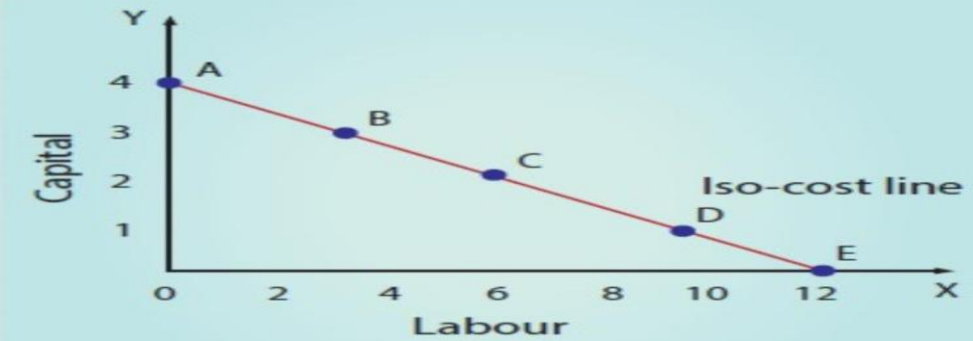
. It is otherwise called as “iso-price line” or “iso- income line” or “iso-expenditure line” or “total outlay curve”

Mathematically, an isocost line can be expressed as

$C = w L + r K$
Where,
C = cost of production
w = price of labor or wages
L = units of labor
r = price of capital or interest rate
K =units of capital

Schedule

Combinations	Units of Capital Price = ₹30	Units of Labour Price = ₹10	Total Expenditure (in Rupees)
A	4	0	120
B	3	3	120
C	2	6	120
D	1	9	120
E	0	12	120



Suppose that a producer has a total budget of Rs.120 and for producing a certain level of output, he has to spend this amount on two factors Labour (L) and Capital (K). Prices of factors K is Rs. 30 and L is Rs.10. Iso Cost Curve can be drawn by using the following hypothetical table.

As shown in Table, there are five combinations of capital and labour such as combination A represents 4 units of capital and zero units of labour and this combination costs Rs.120. Similarly other combinations (B,C,D and E) cost same amount of rupees (Rs.120).

Symbolically,

4K + 0L= Rs..120

3K + 3L= Rs..120

2K + 6L= Rs..120

1K + 9L= Rs..120,

0K + 12L= Rs..120.

Thus, all the combinations A, B, C, D and E cost the same total expenditure.

From the diagram it is shown that the costs to be incurred on capital and labour are represented by the triangle OAE. The line AE is called as Iso-cost line