4. How is a seller under perfect competition a price taker? What is the relevance of the characteristic that there is large number of sellers in this context?

5. Define market.

6. Define monopoly?

7. What is perfect competition? State its main features.

8. What is oligopoly? Discuss its characteristic features.

9. Distinguish between perfect competition and monopoly.

10. State the main features of monopoly.

11. Define equilibrium price.

12. How does oligopoly differ from monopolistic competition?

13. What is Monopolistic Competition? How is it different from perfect competition?

14. State five necessary conditions for perfect competition to prevail in a market.

15. "Under perfect competition, the seller is a price-taker; under monopoly, he is the price-maker." Expalin.

16. Write short notes on:

    (a) Pure competition

    (b) Differentiated product

    (c) Demand curve of a seller under different market forms

    (d) Oligopoly.

17. How does an increase in the price of a substitute good in consumption affect the equilibrium price?

18. What does the FAD theory of famines say?

19. What is meant by economic viability of an industry?

20. Give one example of each of direct intervention and indirect intervention in the market mechanism.

21. What do you understand by (a) control price and (b) support price?

22. Name the three forms of imperfectly competitive markets.

23. What is the profit maximizing condition of a competitive firm in the long run?

24. What is meant by abnormal profit?

25. What is meant by abnormal loss?

26. What is break-even price?

27. How many firms are there in a monopoly market?

28. What is a cartel?

29. What is the profit maximizing condition for a monopoly firm?

30. What are anti-trust legislations?

31. Give two examples of monopolistically competitive market?

32. What are selling costs?

33. What are advertising costs?

34. What is persuasive advertising?

UNIT-4

11 FACTOR PRICE DETERMINATION

A factor is a human or material agent which contributes something to production. A factor can be a worker, a machine, a building or a piece of land. Every factor has some sort of stored-up productive power which it exerts when used in production. This productive power or the actual contribution to the production is called services of a factor. Factor services are demanded by producers and supplied by factor owners. In economics, factors of production, which help in producing goods and services, are classified broadly into human and non-human factors. Labour, which is provided by a worker, is a human factor whereas buildings and machinery or capital is a non-human factor. When we say 'Prices of factors', it means the price a factor should get for providing its services. Labour gets wages and use of capital is rewarded with interest. Land, which is an important factor of production, earns rent and an entrepreneur who takes the risk of business in the environment of uncertainty earns profits – either positive or negative.

This chapter deals with the explanation of how prices of factors of production are determined by the forces of demand and supply. Prices of factor services are determined in the same manner as that of product pricing, the difference lies in the determinants of factor demand and supply.

Demand for a Factor

The price of a factor service is determined by the demand and supply of that factor. Producers demand various factor services for producing goods and services in the market. Every producer faces the problem of taking decision regarding the payment which it has to make to factors for the return of their services. This is one of the most crucial questions before a producer. In such situation, it is required to know the contribution made by a factor. How much extra a factor adds to the total output produced by a firm is required to be determined at such time. In economics, this extra contribution is called as marginal product of labour/factor. Thus, marginal product or marginal physical product (MPP) of labour/factor is the addition made to the total output by employing one more unit of labour/factor. For instance, if 5 workers together construct 20 meters of road length in a day and when one more worker joins them, the road length increases to 25 meters, then the 6th worker's contribution to the total work is 5 meters. This is marginal physical productivity of 6th labour. The concept of MPP is primarily developed concerning labour, but it is equally applicable to other factors, such as land, capital, and organization. Thus, price of labour, i.e., wages depends upon the MPP of labour. A producer will equate its marginal cost of producing

goods with the marginal productivity of labour so as to maximize his satisfaction/profits. Thus, MPP is of utmost importance in the theory of factor pricing. Marginal physical productivity of labour for a firm is shown in the table and Fig. 11.1 below.

Units of labour	*Total Physical Product*	*Marginal Physical Product*
1	5	5
2	11	6
3	22	11
4	41	19
5	65	24
6	95	30
7	121	26
8	145	24
9	162	17
10	171	9

Marginal physical productivity of labour increases as additional labourers are employed but after certain point it begins to decline continuously. Fall in the MPP after 6th unit of labour is not due to the decline in the efficiency level of labourers but due to the technical conditions which do not allow the continued increase in the units of labourers in relation to other factors. Total physical productivity (TPP) of labour increases, initially, at increasing rate and thereafter at diminishing rate as seen in the table above.
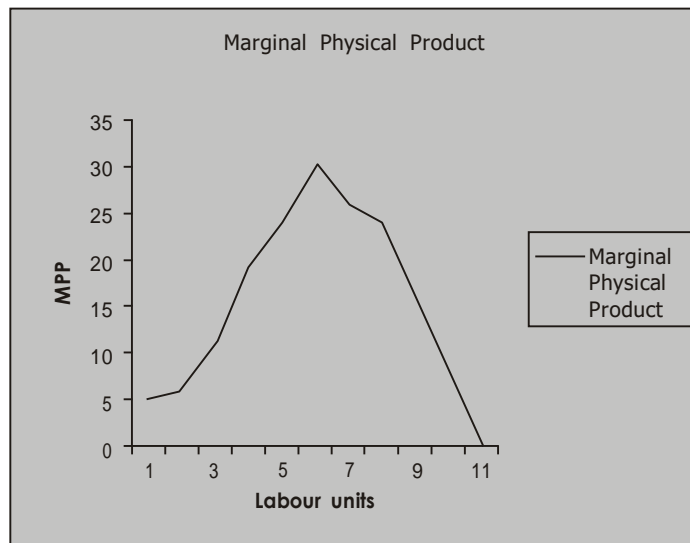
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Fig. 11.1

Every producer is interested in the revenue it will earn by employing a factor. In other words, a firm is interested in the money value of MPP of labour than in just productivity in physical terms. Money value of marginal physical product of a factor is estimated by multiplying MPP with price of the product. Thus,

$$VMP = MPP \times \text{Price of the product}$$

A producer has to compare its marginal cost for employing an extra labour with what it adds to the total output, i.e, additional/marginal revenue. The additional revenue earned by using one more unit of a factor is called its marginal revenue product (MRP). MRP is more significant term than MPP. We can find MRP by multiplying MPP with the marginal revenue of the product being produced by the firm. Thus,

$$MRP = MPP \times MR$$

The schedule below explains how MRP is calculated. Let us take Rs. 5/- as the price per unit of the good in question. Further, it is assumed that there is perfect competition in the factor market, so that the price remains same at all levels of factor demanded and supplied. At constant price, MR is equal to the price. Therefore under perfect competition, MRP is equal to VMP. The demand curve of a firm for a single factor is its value of marginal product curve.

Units of labour	Marginal Physical Product (in units)	Marginal Revenue Product (in Rs.)
1	5	25
2	6	30
3	11	55
4	19	95
5	24	120
6	30	150
7	26	130
8	24	120
9	17	85
10	9	45

The MRP curve like the MPP curve has similar shape. It first rises and then falls continuously.

The determinants of the demand for a variable factor by an individual firm are the following:

1. The prices of the input. The higher the price of a factor, the smaller the demand for its services.
2. The marginal physical product of the factor.
3. The price of the commodity produced by the factor.
4. The amount of other factors which are combined with labour.
5. The prices of other factors.
6. The technological progress, which changes the MPP of all inputs and hence the demand.

The market demand for a factor is not the simple horizontal addition of the demand curves of individual factors. This is because as price the factor falls producers will employ more of this factor and expand their output. It will result in downward shift of supply of the commodity causing price of the commodity to fall. Since price is one of the components of the demand curves of the individual firms for a factor, these curves shift downward to the left. The market demand curve of labour is shown in Fig. 11.2. At W1 wage rate, firms demand ON level of factors and as wage rate falls to W2, demand also increases to OM.
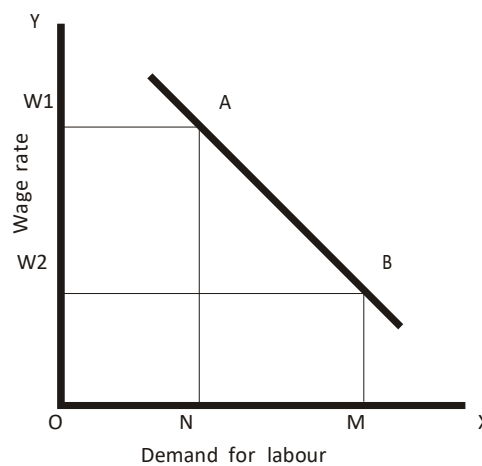

Fig. 11.2

Supply of a Factor

To determine the supply of labour, we assume that labour is a homogenous factor, i.e., all labour units are identical to each other. The important factors which determine market supply of labour are the following:

1. The price of labour, i.e., wage rate.

2. The tastes of consumers which affect their striking balance between leisure and work.

3. The size of population.

4. The labour force participation rate.

5. The occupational, educational and geographical distribution of labour.

The relationship between the supply of labour and the wage rate defines the supply curve. Therefore, other factors than wage rate are assumed to be constant, while determining the supply curve of labour. The market supply is the summation of the supply of labour by individuals. The supply curve of an individual labour is shown in Fig. 11.3.
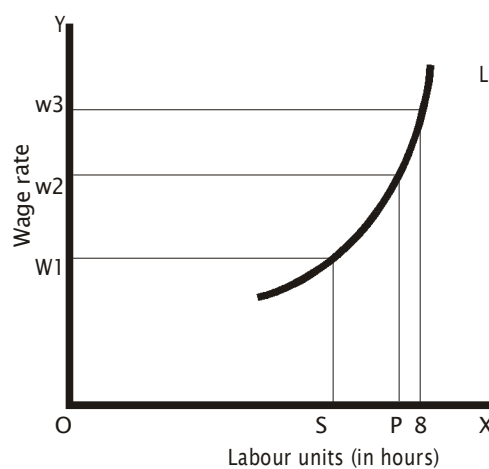

Fig. 11.3

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When the wage rate is W1, the individual labour is in equilibrium by working OS hours and as wage rate increases to W2, labour hours also increases to OP. However, at some higher wage rate the labour hours may decline. This is depicted in the figure above, when wage rate rises to W3, the individual works for OQ hours. It is seen that the individual works less than at W2 wage rate, as evident from the fact that PQ < SP. When wage rate increases still further, the hours supplied for work declines even more. The behaviour of labourers at higher wage rates produces a backward bending supply curve for labour as shown in the Fig. 11.4.
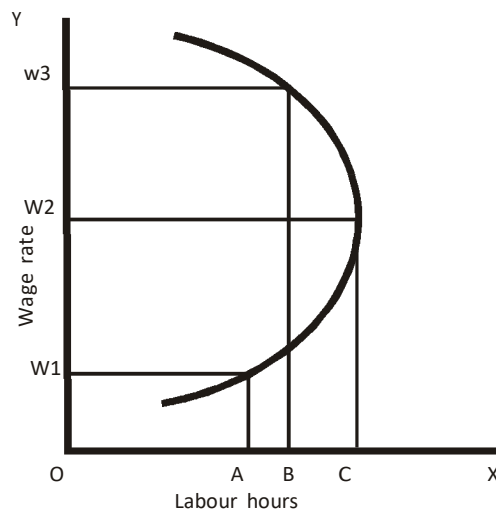

Fig. 11.4

When wage rate increases say up to a point, it gives incentive to the labourers for working or supplying more hours but when wage rates increase further, it creates disincentive for longer hours of work. The reason being longer hours of work means less leisure hours. As the wage rates rises, the individual's income also rises, which enables him to have more leisure hours. Thus, beyond a certain level of the wage rate, the supply of labour declines as the worker prefers to use his increased income on more leisure activities. It means, as incomes reach the level required for a comfortable standard of living, workers like to have more vacations, fewer hours of work per day rather than go on working at higher wage rates.

However, aggregate supply curve of labour does not behave in this manner. Economists argue that in the short run such pattern may be evident but in the long run, the supply curve must have a positive slope. Higher wages may induce some people to work less hours, but will also attract new workers in the market in the long run.

Determination of Price of a Factor under Perfect Competition

Thus, we can determine the factor price in perfect markets with the help of demand and supply curves of a factor. The Fig. 11.5 shows the price determination by the intersection of these two curves. In the figure, the equilibrium wage is OW and then employment level is OM. Thus, we find that the determination of wage rate is same as the determination of price of a commodity. But the determinants of demand and supply of a factor are different than that of goods. The