UNIT 2: WAGES

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2.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- define wages and make a distinction between nominal wages and real wages
- discuss the Marginal Productivity Theory of Determination of factor prices
- aquire the concept of collective bargaining and its role in wage determination.

2.2 INTRODUCTION

For the contribution towards economic activities, the factors of production earn reward. Wage is such a reward obtained by labour. In this unit, you will be able to get acquainted with the concept of wages and the differnece between nominal wages and real wages. At the end of the unit, you will also be able to discuss an important theory in Economics, viz., the Marginal Productivity Theory of Determination of Factor Prices. Apart from that, you will also be able to acquire knowledge about the concept

of collective bargaining and its role in wage determination.

2.3 BASIC CONCEPTS OF WAGES

In this section, we shall basically deal with the meaning of wages and the differences between nominal and real wages.

2.3.1 Meaning of Wages

The term 'wages' means payment received by the provider of services of labour. Wage is the reward obtained by labour for its economic activities towards the production process. According to Benham, *"A wage may be defined as a sum of money paid under contract by an employer to a worker for services rendered."*

It is worth mentioning here that many criticize the view of considering labour as a commodity. There is no doubt that labour has many features (emotion, feeling, individual differences, etc.) which set it apart from other factors of production viz., land and/or capital. However, in Economic theory, labour is also considered a commodity. Like a commodity, it is bought and sold in the market. Thus, a labour participates in an exchange process: it provides labour (productive capacity) and time and gets reward in the form of wage.

2.3.2 Nominal Wages vs Real Wages

Nominal wages refer to the price paid in monetary terms to a labour for his services. Thus, if a peon in an office receives Rs. 2000 per month, then this is his nominal wage per month for his service. Nominal wages are also called as *money wages*.

Sometimes, a labour gets other facilities, besides his money wage. Such additional facilities may include: festival bonus, incentives, medical re-imbursement, house rent (or free accommodation), vehicle allowance, study allowance for children etc. Thus, real wage of the labour includes his money wage plus

all other goods and services he receives from the organisation.

There is another interpretation of real wage. According to this, the amount of goods and services a labour can buy out of his given money wage at any particular point of time is called the real wage. Thus, real wage is the amount of purchasing power received by a worker through the money wage. In this case, real wage depends on two factors: first, amount of money wage and second, the price level of the economy. Thus, real wage can be measured as:

$R = \frac{W}{P}$ where, R = Real wage, W = Money wage and P = Price level.

This means that the standard of living of a labour is determined by the real wage and not by the money wage he receives.

Determinants of Real Wage: Real wage is determined by the following factors:

- **Price Level of the Economy:** It is true that price level determines the purchasing power of money.
- **Money Wage:** Money wage also directly determines the real wage. This is because more goods and services can be bought when money wage is more.
- **Working Condition:** The working condition in which labours work also determines their real wage. Let us consider an example. Two workers get the same monthly salary, say Rs. 6000/-. But the first worker works in an office while the second worker works in a coal mine. Definitely, the first worker is much better in terms of working environment. So, we can very easily say that the real wage of the first worker is above that of the second worker.
- **Nature of the Job:** Nature of the job – whether permanent or temporary – also determines the real wage. Let us consider another example of two labourers. The first labourer working in a woolen factory earns Rs 5000/-. Another labourer working in a handloom factory earns Rs 4000/-. The first worker gets

employment only for 4 months during the winter season only, while the second worker gets his employment throughout the year. Thus, even when the first labourer earns more money wage, but his real wage is less as his employment is temporary.

- **Social Status:** The real wage is also determined by the social status assigned to a job. A teacher of a High School and a clerk of a bank may draw the same monthly salary. But in our society the teacher is bestowed with more respect than the bank clerk. Hence, the real wage of the teacher is considered more than that of the bank clerk.
- **Future Prospects:** The future job prospect also determines the real wage. Some reputed Public Sector Undertaking (PSU)s provide better job prospect than others. Thus, the real wage of a worker in such a reputed PSU will be more than that of another worker working in an ordinary organization.
- **Extra Benefits:** The real wage of the workers will be considered more if they get some other extra benefits.



CHECK YOUR PROGRESS

Q 1: State whether the following statements are true (T) or false (F).

(a) Economic theory does not consider labour as a commodity as it is vastly different from other factors of production. (T/F)

(b) Another name of real wage is nominal wage. (T/F)

Q 2: What is real wage? How can you measure it? (Answer in about 50 words).....

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Q 3: Mention at least four determinants of real wage. (Answer in

about 30 words).....

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2.4 MARGINAL PRODUCTIVITY THEORY OF DETERMINATION OF FACTOR PRICES

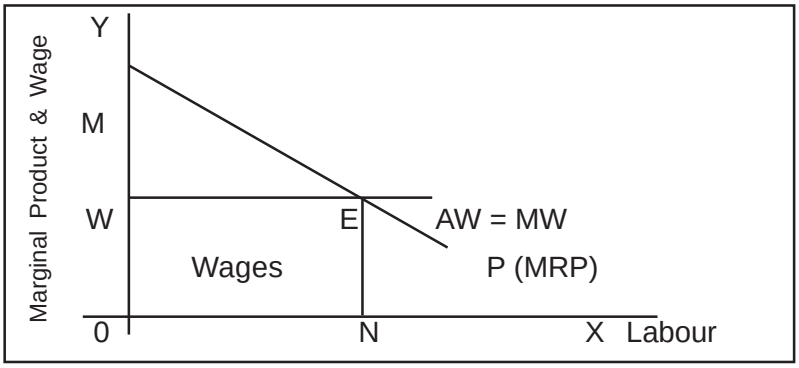
Marginal Productivity Theory was initially used by Ricardo and West in the determination of rent on land. Later, economists like J.B. Clark, Jevons, Wicksteed and others contributed to it. Among these economists, J.B. Clark was the pioneer in using this theory in wage determination.

Assumptions: Clark's Marginal Productivity Theory rests on the following assumptions:

- Clark assumes a completely static economy. Thus, changes in the form of economic growth, increase in population, technology of production, changes in stock of capital are ruled out.
- There prevails perfect competition both product and factor markets.
- Labour and capital are perfectly mobile. Labour is homogeneous.
- Form of capital can be varied at will. Thus, capital equipment of production can be adapted to varying quantities and abilities of available labour.
- The law of diminishing returns prevails.
- Profit maximisation is the goal of the firm employing labour.

Considering the above assumptions, it can be said that a rational employer will hire maximum units of labour so as to utilize his existing capital equipment to the fullest extent. It can be easily interpreted that given fixed stock of capital equipment as the firm increases labour units, its marginal productivity will decline. In fact, he will go on hiring additional units of labour as long as addition to tatal revenue made by the marginal units of labour is above the wage he has to pay for it. Thus, the employer will reach equilibrium at the position where marginal revenue product of labour is equal to the wage rate.This can be shown with the help of the Figure 2.1.

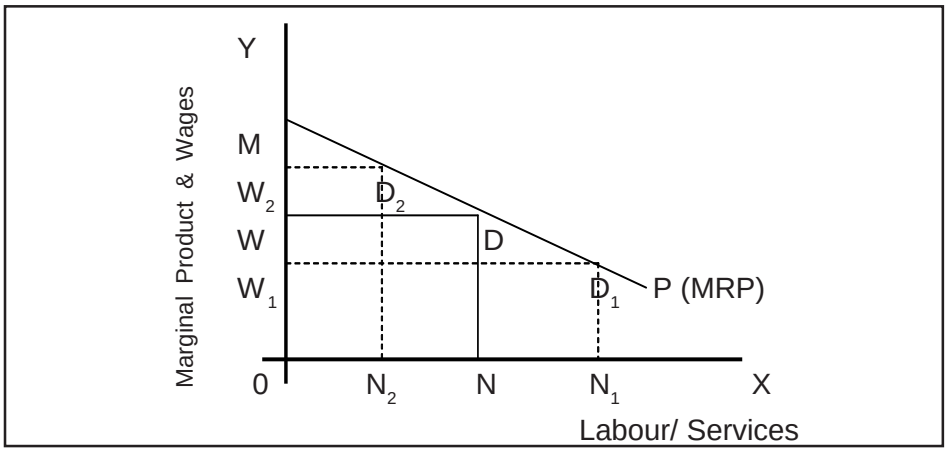
Figure 2.1 : Relation between Wage Rate and Marginal Product of Labour



In Figure 2.1, the MRP is downward sloping, as MPP declines and MR is constant due to perfect competition in the product market. The cost of the firm comes in the form of wage. Since there is perfect competition in the labour market, MW = AW. Being a profit maximiser, the firm will reach equilibrium when MRP = MW. Hence E will be the equilibrium point. Correspondingly, we get ON level of employment and OW level of equilibrium wage.

Now, we shall discuss the application of the above theory in the determination of the wage rate. Clark points out that when there is unemployment in the society, the unemployed labour will compete among themselves to get employment. This will reduce the prevailing wage rate. On the other hand, the employers will bid the wage rate up if the prevailing wage rate is lower than the marginal product of available labour force. This happens because when the wage rate is lower than the marginal product of labour, the employers' demand for labour force will be more than the available labour force. In this situation, the employer finds it more profitable to employ more labour units at lower cost. Thus, given the labour supply in the economy, there will be competition among the employers to get more labour units to its firm. Thus, the increased demand for labour will push up the wage rate. This has been explained with the help of Figure 2.2.

Figure 2.2: Determination of Wage Rate by Marginal Productivity



From figure 2.2 it can be seen that that ON amount of labour is available in the whole economy. Corresponding to this quantity of labour ON, the marginal revenue product of labour is ND. As we have already discussed, the equilibrium wage rate is determined by the marginal revenue product of labour. Thus, corresponding to the level of marginal revenue product ND, the equilibrium wage rate is OW.

Now, at a wage rate higher than OW, say OW_2, the labour force employed will be ON_2. This is lower than the full employment level ON; hence, there will be competition among the unemployed labour force (NN_2), and consequently, it will bring the wage rate down to OW.

Similarly, at a wage rate lower than OW, say OW_1, employer will find it profitable to employ more units of labour as wage rate (OW_1) is below the marginal product of labour (OW or ND). Thus, the demand for labour will be ON_1, against the total supply of labour ON. This will propel competition among the employers, and given the labour supply, the wage rate will increase to OW.



CHECK YOUR PROGRESS

Q 4: What are the assumptions of Clark's version of the Marginal Productivity theory of Distribution? (Answer in about 50 words)

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Q 5: Why does an employer tend to increase its labour employment when the wage rate is below the marginal productivity curve of labour? What is the consequence? (Answer within 50 words)

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2.5 WAGES AND COLLECTIVE BARGAINING

Meaning of Collective Bargaining: Some modern economists discuss determination of wage as a process of collective bargaining. It is obvious that an individual worker is unlikely to affect the determination of wage rate offered to him. However, if the workers are organized and they form a trade union, the bargaining power of the workers increases and they can affect the prevailing wage rate. Thus, *collective bargaining may be defined as the process in which conditions of employment are determined by the mutual agreement between the representative of the trade union on the one hand, and representative of the employers (or employers' association) on the other*.

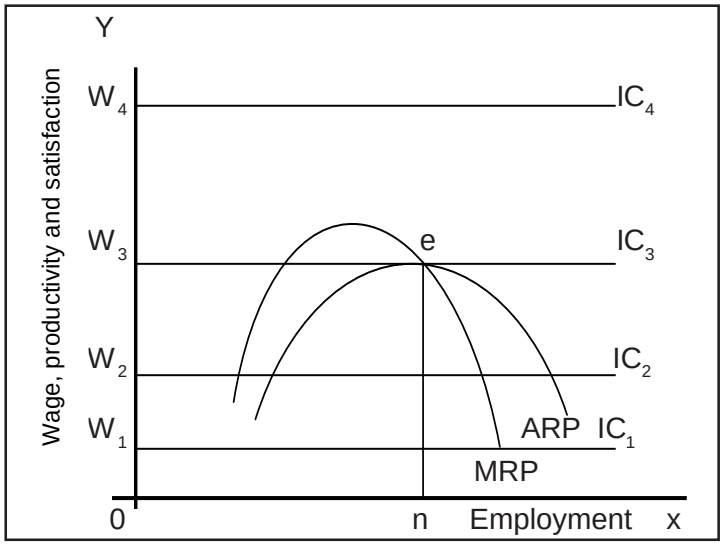
Collective Bargaining and Wage Rate Determination: Based on different market conditions, there are a number of theories regarding collective bargaining and its effect on determination of the wage rate. In this unit, we shall discuss about William Fellner's model of collective bargaining.

The model of Fellner assumes the market structure of bilateral monopoly. The model discusses wage determination through collective bargaining in two situations: first, the trade union tries to achieve maximum possible wage rate and are indifferent about the effect of such wage rate on employment generation; second, the union seeks to achieve a certain

optimum combination between wage rate and employment generation. Both the models use the tools of indifference curve and ARP and MRP curves.

Situation I: Trade Union Tries to Achieve Maximum Possible Wage Regardless of Its Effect on Employment: In this case, the shape of an indifference curve is a horizontal straight line. And, higher indifference curves from the x-axis indicate higher levels of satisfaction of the trade union. The process of collective bargaining and wage rate determination has been shown with the help of Figure 2.3.

Figure 2.3: Wage Determination under Collective Bargaining (when the Trade Union is Indifferent to the Effect of Wage Rate on Employment Generation)



From figure 2.3 it can be seen from the above figure that the successive indifferences curves are located at successively higher positions from its previous indifference curve. This means that as we move from IC_1 to IC_2, from IC_2 to IC_3 and from IC_3 to IC_4, the distance between these successive indifference curves increases. Thus, $W_1W_2 > 0W_1$; $W_3W_2 > W_1W_2$ and so on. This happens because, as we move towards higher satisfaction levels, larger increments in wage rate are required to yield a constant rise in satisfaction. This is in fact a basic human nature.

Now, when we have said that the union tries to achieve the maximum possible wage rate, it implies that the trade union will actually

face a certain limit with regard to the wage rate. Thus, there is a maximum possible limit and a minimum limit to the wage rate. It is unlikely that the employer will pay wage rate above the maximum level of ARP. Because, the employer will have to suffer losses, as cost (i.e., wage) will be above average revenue (i.e., ARP); better he may opt to close down his firm. This will leave all the workers jobless. Therefore, the trade union will try to achieve the wage rate which is equal to or is near the maximum ARP. Thus, the wage rate which is set at the tangential point of the ARP curve at its maximum point and the indifference curve is the maximum possible wage rate the trade union will be able to achieve. In the above figure, OW_3 is such a wage rate. This is because the ***ARP, MRP*** and the IC_3 curves intersect at point e corresponding to this wage rate.

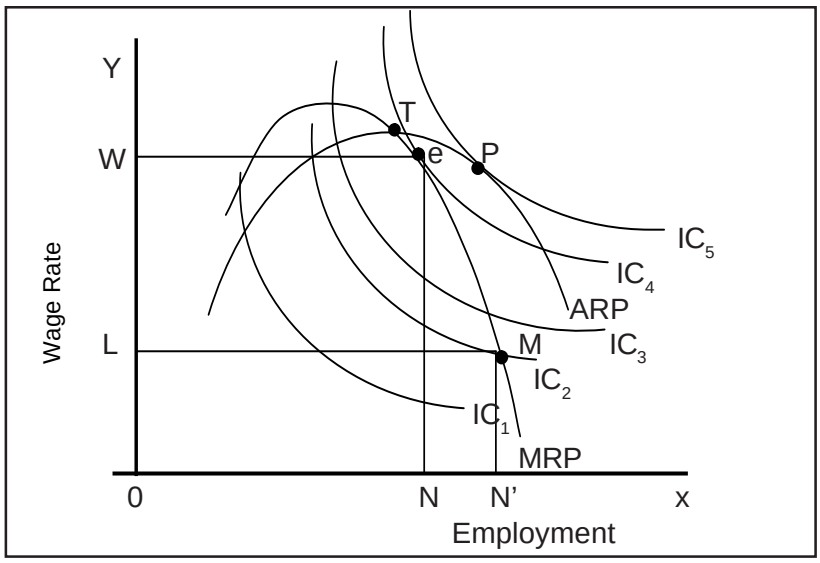


MRP and ***ARP:*** please refer to the 'Conceptual Note' at the end of this unit.

Contrary to this maximum possible wage rate, the lower limit below which the trade union will not work or will go on to strike can not be exactly determined. However, though it cannot be determined precisely, yet it can be understood that practically there will be a lower limit to the wage rate below which the trade union will decline to work. This is because the trade unions are formed to bargain for better wage rates. If this can not be achieved, members of the trade union will find it futile to be part of the union, and as a result, it will break down. So, the trade union will always try to bargain a wage rate above this minimum level and equal to or near the maximum possible wage rate. The lower limit of the wage rate depends on the factors like: a) average revenue productivity, b) the relative strength of the union or the employees, c) the business condition of the economy, d) nature of the demand of the product, e) elasticity of substitution between labour and capital, f) prevailing wage rate, g) cost of living, etc.

Situation II: Trade Union Tries to Achieve a Balance between Wage and Employment Generation: The above situation holds good only in the case of an individual firm. But, when the industrial trade union (larger than an individual firm's trade union) negotiates with the employers' association, the union will have to take into account the effect of wage rate on employment generation. This becomes necessary, because it is possible that the firms are operating under differential cost conditions,

Figure 2.4: Wage Determination under Collective Bargaining (when the Trade Union Seeks a Balance between Wage Rate & Employment Generation)



and as a result, certain firms may have to close down owing to losses in operation. This will make the workers of that particular firm jobless. So, unless there is scope of employment in other firms, the workers may find it difficult to earn their livelihood. This has been discussed with the help of Figure 2.4.

From Figure 2.4 it can be seen that the union attains the best combination of highest satisfaction and employment generation while being on the indifference curve IC_4, as this is the highest indifference curve which is tangent to the MRP curve at point e. Thus, while being on point e, the union attains OW level of wages and ON level of employment. The point e is in fact near the highest point of the ARP curve T. The union cannot achieve this level, as this point can not be tangent to an indifference curve given its present shape. The employers' association, on the other hand, will try to move to a lower point than e along the MRP curve. This is because this will reduce the cost of production and increase its profitability. So, the bargaining will continue between the industry trade union and the employers' association regarding the combination of wage rate and employment. The decisive factor, however, is the superior strength of the two parties among other factors, we have discussed in the previous

situation. As we have already said in the previous situation, there is a certain lower limit, below which the union will not come down along this MRP curve. Let us assume that point M is such a point, where indifference curve IC_2 is tangent to the MRP curve. At this point, the wage rate is OL and the employment generation is OM. Thus, the industry union will try to set wage rate above this minimum level OL and near or on the level of OW. The actual wage rate however will be determined by the relative strength of the two parties. If the bargaining power of the industry union is more, the actual wage rate will be on or near OW. Similarly, if the bargaining power of the employers' association is more, the actual wage rate will be determined above or on OL.



CHECK YOUR PROGRESS

Q 6: State whether the following statements are true (T) or false (F).

(a) The modern theory of determination of wages as determined as a process of collective bargaining has been put forward by Alfred Marshall. (T/F).

(b) The modern theory of wage determination as discussed by WilliamFelner contains three parties: a) the labour union, b) the employers and c) mediators between the two. (T/F).

Q 7: How is the actual wage rate determined in the bargaining process between the employer and the labour union? (Answer in about 60 words)

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Q 8: Mention the factors which affect the lower limit of the wage rate? (Answer in about 40 words).

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2.6 LET US SUM UP

- Clark points out that when there is unemployment in the society, the unemployed labour will compete themselves to get employment. This will reduce the prevailing wage rate.
- When wage rate is lower than marginal revenue product of labour, the employer finds it more profitable to employ more labour units at lower cost, and hence, given the labour supply in the economy, there will be competition among the employers to get more labour units to its firm. This increased demand for labour will bid up the wage rate.
- Collective bargaining may be defined as the process in which conditions of employment are determined by the mutual agreement between the representative of the trade union on the one hand, and representative of the employers (or employers' association) on the other.
- The lower limit of the wage rate depends upon several factors.



2.7 FURTHER READING

1) Ahuja, H. L. (2007). *Advanced Economic Theory: Microeconomic Analysis*. New Delhi: S.Chand & Company Ltd.

2) Chopra, P. N. (2008). *Micro Economics*. Ludhiana: Kalyani Publishers.

3) Dewett, K. K. (2005). *Modern Economic Theory*. New Delhi: S.Chand & Sons.

4) Sundharam, K. P. M., & Vaish, M. C. (1997). *Microeconomic Theory*.

New Delhi: S. Chand.

2.8 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: (a) False (b) True.

Ans to Q No 2: Real wage may be defined as the amount of purchasing power received by a worker through the money wage. Thus, real wage depends on two factors: first, amount of money wage and second, the price level of the economy. Thus, real wage can be measured as:

$$R = \frac{W}{P}$$ where, R = Real wage, W = Money wage and P = Price level.

Ans to Q No 3: Among the determinants of real wages, important ones are:

- Price Level of the Economy,
- Money Wage,
- Working Condition, and
- Future Prospect of the Job.

Ans to Q No 4: The underlying assumptions of Clark's version of Marginal Productivity Theory of Distribution are:

- There prevails a completely static economy.
- There is perfect competition in the factor market.
- Labour and capital are perfectly mobile. Labour is homogeneous.
- Form of capital can be varied at will.

Ans to Q No 5: When wage rate is lower than marginal revenue product of labour, the employer finds it more profitable to employ more labour units at lower cost, and hence, given the labour supply in the economy, there will be competition among the employers to get more labour units to its firm. This increased demand for labour will bid up the wage rate.

Ans to Q No 6: (a) False (b) False.

Ans to Q No 7: The actual wage rate is determined by the relative strength of the two parties. If the bargaining power of the industry union is more, the actual wage rate will be on or near the maximum possible upper limit of the wage. Similarly, if the bargaining power of the employer's association more, the actual wage rate will be determined above or on the lower limit below which the union will not work.

Ans to Q No 8: The lower limit of the wage rate depends on the following major factors:

- average revenue productivity,
- the relative strength of the union or the employee,
- the business condition of the economy,
- elasticity of substitution between labour and capital,
- prevailing wage rate.



2.9 MODEL QUESTIONS

A) Short questions (Answer each question in about 150 words)

Q 1: Write short notes on:

(a) Wage in modern economic theory

(b) Collective Bargaining

Q 2: Show the relation between collective bargaining and wage rate determination.

Long Questions (Answer each question in about 300-500 words)

Q 1: Discuss Clark's version of Marginal Productivity Theory of Wage determination.

Q 2: Discuss the concept of collective bargaining. How does a labour union arrive at a balance between wage rate and employment generation in a process of collective bargaining.

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CONCEPTUAL NOTE: RELATION BETWEEN WAGE AND PRODUCTIVITY

In the first semester course, we have already discussed that in the long-run, under perfect competition, the price of a product equals its marginal and average cost of production. Similarly, in the long-run under perfect competition, the wage rate equals the marginal and average revenue product of labour. Now, before discussing their inter-relationships, let us discuss the concepts briefly.

Marginal Physical Productivity (MPP): MPP refers to the addition made to the total physical product (i.e., production volume) by employing one additional unit of labour, quantity of other factors of production remaining unchanged. This MPP when expressed in revenue (price) terms, is called Marginal Revenue Productivity or Marginal Revenue Product (MRP).

*(***N.B.:** *It is to be noted that there is another concept called Value of Marginal Product (VMP). The MPP when expressed in price, it is called VMP. Under perfect competition, however VMP and MRP are same, as price = AR = MR. Under imperfect competition, however, the two will not be same.)*

Average Revenue Productivity (ARP): ARP is the average revenue per unit of factor of production. This is arrived at by dividing total revenue product (TRP) by total units of factors of production.

The relationship between MRP and ARP is shown with the help of the following table 2.A.

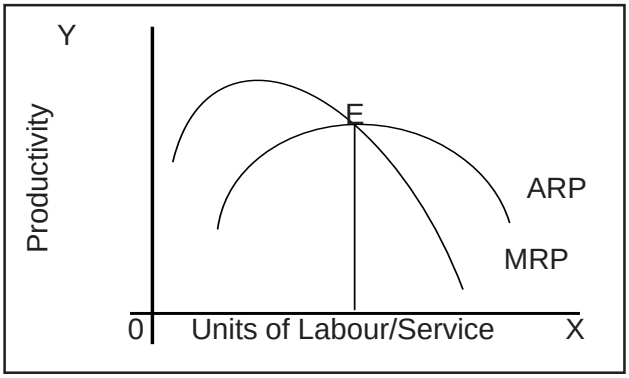
Table 2.A: Relationship between TRP, ARP and MRP

Labour units	Total Physical Product (TPP) (units)	Total Revenue Product (TRP = price x TPP) *(Rs. 3 per unit)*	Average Revenue Product (ARP)	Marginal Revenue Product (MRP)
(1)	*(2)*	*(3) = (2)x Rs.3*	*(4) = (3) / (1)*	*(5)**
1	5	15	15	15
2	11	33	16.5	18
3	18	54	18	21
4	26	78	19.5	24
5	33	99	19.8	21
6	39	117	19.5	18
7	44	132	18.8	15
8	48	144	18	12
9	51	153	17	9

To some extent, the relationship between ARP and MRP is similar to the relationship between AC and MC as already discussed in previous course. The basic difference between these concepts is that while the AC curve is U-shaped, the ARP curve is inverted U-shaped. The shape of the MRP is also opposite to the shape of the MC curve. This is because, in the initial stages when labour units are increased (up to when 5 units of labour are utilized), ARP increases; but after a stage, it starts declining (after utilization of 6 units of labour and onwards). Similarly, up to 4 units of labour, MRP increases more than ARP; but after utilization of the 5th units of labour and onwards, it falls more sharply than ARP. MRP cuts ARP at its highest point.

Graphically, the relation between ARP and MRP is shown with the help of the following figure 1.A. It is seen that as long as MRP is above ARP, the ARP will be rising. When MRP is below ARP, ARP will be declining. At the highest level of ARP, i.e., at point E, MRP = ARP.

Figure 1.A: Relationship between ARP and MRP



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