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Class: B.A.Sem (1)
Paper: MJC-1
Topic: Backward Bending Supply Curve of Labour

Introduction

In economics, wage determination in the labour market is an important topic. Forces of demand for labour and supply of labour determine the equilibrium wage rate in a free labour market. Households supply labour and the supply of labour means the willingness and ability of households to sell labour at various wage rates in a given time period. The supply of labour is discussed for an individual worker, for the whole market and for an individual firm. In this article, we will explain the supply of labour by an individual worker.

Backward Bending Labour Supply Curve

For an individual worker, the supply of labour is the number of hours for which he/she is willing and able to work at various wage rates in a given time period. For an individual worker, labour supply curve is backward bending. This backward bending supply curve, or backward bending labour supply curve, is basically a graphical representation of the response of an individual worker towards wage increase where, when real wages increase to a certain level, the worker will substitute time previously devoted to paid work for leisure, due to which labour supply decreases and so less time is being offered by workers for work.

This supply curve for an individual worker shows an increasing supply of labour at first as wage rate rises, but when the wage rate further rises, the supply curve bends backward and shows a falling supply of labour. In labour markets, the labour supply curve for an individual worker is backward bending because, after a certain time, an increase in wages can lead to a decline in labour supply. This happens when increased wages provoke workers to work less and enjoy more leisure time.

Basically two types of labour supply curve. One is perfectly elastic and the other is upward sloping curve. A perfectly elastic or a horizontal supply curve of labour is not found in reality. An individual labour supply curve is likely to be positive sloping indicating larger supplies of labour at a higher wage rate. But this is not always so.

That means, a worker may be induced to work less when his wage rate tends to rise. Thus, labour supply curve may be backward bending. How such individual supply curve of labour is derived may be described in terms of Fig. 6.16.

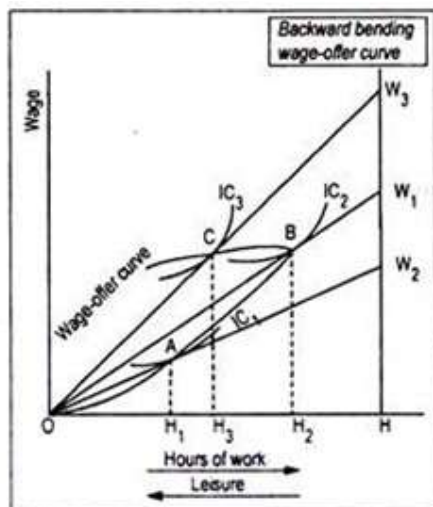


Fig. 6.16: The Wage-offer Curve

We know that the individual supply of labour depends on the wage rate. Usually, as wage rate rises, an individual labour supplies more working hours than before. But there is another temptation on the part of the worker—the temptation of less work and more leisure.

Once the optimum wage is earned by a labour, further increase in wage rate may induce him to work less and take more leisure. Leisure is attractive too.

As a result, labour supply curve becomes backward bending. This has been shown in terms of indifference map between work (or leisure) and wage. A labour's indifference curve represents different combinations of work or leisure and wage that yield the same amount of utility to the labour.

The level of utility, however, depends on total wage earnings and total leisure hours (or working hours). An individual cannot work 24 hours a day, so he must take leisure. Remember that leisure is not an '**inferior good**'. Wage to a labour is considered as a '**good**' while more work is considered as a '**bad**' commodity.

In Fig. 6.16, we measure working (or leisure) hours on the horizontal axis and wage rate on the vertical axis. Let us assume that an individual labour can work up to OH hours, rather than 24 hours. IC₁, IC₂, and IC₃ are three indifference curves. Higher indifference curve represents higher level of utility.

We have drawn three straight lines OW₁, OW₂, OW₃ whose slopes represent different wage rates. These lines are called wage constraint line or simply, the budget lines. Higher the line, higher is the wage rate. The worker will reach equilibrium when the slope of the budget line equals the slope of the indifference curve.

In other words, equilibrium occurs at that point where budget line becomes tangential to the indifference curve. The slope of the line OW₁ represents a wage rate equal to AH_1/OH_1 . At this wage rate, an individual works OH₁ hours and takes leisure of H₁H hours.

The slope of the line OW₂ represents higher wage rate than OW₁ and the worker maximizes his utility at point B. At this point, slope of the line OW₂ = $(= BH_2/OH_2)$ is equal to the slope of

the IC_2 . Since $BH_2/OH_2 > AH_1/OH_1$, the worker supplies more working hours (i.e., OH_2) and takes fewer leisure hours (i.e., H_2H).

Further increase in wage rate induces labour to enjoy more leisure and less work, since leisure is a 'good' commodity. The slope of the line OW ($= CH_3/OH_3$) indicates higher wages. Corresponding to the equilibrium point C, the individual worker now works fewer hours (i.e., $OH_3 < OH_2$) and enjoys more leisure hours (i.e., $H_3H > H_2H$).

Now, by joining these points of equilibrium (A, B and C), we obtain wage-offer curve. Initially, this curve is upward rising but once point B is reached it takes a backward turn. This means that, in the initial stage, supply of labour rises as wage rate rises, but, ultimately, supply of labour declines as wage rate rises.

This backward bending wage-offer curve may be used to derive a backward bending labour supply curve. In this connection, we may use the concepts of income effect (IE) and substitution effect (SE of wage change).

Higher wage rate induces a worker to work more instead of availing more leisure. To the worker, as leisure is now expensive, higher wage rate encourages a substitution of work for leisure. This is called substitution effect.

Substitution effect is always positive. It is because of the positive substitution effect that an individual labour tends to work more when wage rate rises. This is evident from Fig. 6.17. As wage rate rises from OW_1 to OW_2 , the supply of labour rises from OH_1 to OH_2 . As wage rate rises, the worker substitutes extra hours of work for leisure.

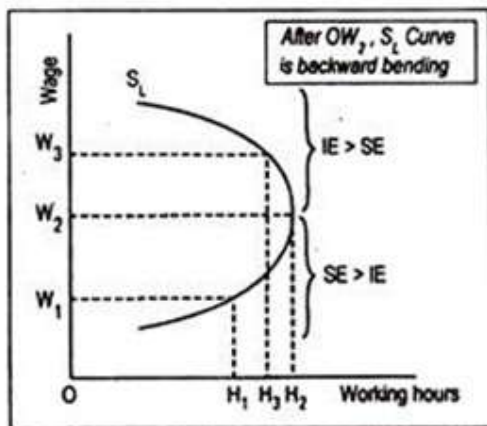


Fig. 6.17: The Labour Supply Curve

But as the wage rate rises, individual worker's real income rises. This increased real income increases his demand for normal goods, including leisure. (Leisure may be a normal or superior commodity.) This is called income effect of wage rate changes.

If the current wage rate becomes too high to an individual labour, he prefers to work less and take more leisure. In our example, if wage rate goes above OW_2 , the individual labour may be tempted to work less from OH_2 to OH_3 . As a result, his leisure hours increase.

Thus, between wage rates OW_1 and OW_2 , substitution effect (SE) is stronger than income effect (IE), inducing individual labour to work more and take less leisure. The S_L curve or labour

supply curve slopes upward between wage rates OW_1 and OW_2 , and it has a positive slope. Between wage rates OW_2 and OW_3 , income effect outweighs substitution effect, inducing our worker to work less and take more leisure.

The supply curve of labour, S_L , thus becomes backward bending. The S_L curve of labour now slopes downwards. The phenomenon of some reputed city doctors working only four hours a day and taking Saturdays and Sundays as absolutely free for themselves may be an evidence; of backward bending supply curve of labour at high income levels.

Limitations of Backward Bending Supply Curve

The following are some limitations of the backward bending supply curve:

Higher Pay for Overtime Hours

Paying higher wages for overtime hours can reduce the effect of the backward bend of the labour supply curve by raising wages only for hours worked for a particular amount. Overtime sustains the substitution effect at a high supply of labour. Therefore, the income effect from the wage rise on all the previous hours worked is removed. As a result, paying higher hourly overtime can encourage workers to work more hours than if the same high rate is paid on all worked hours.

Opportunity-Cost Minimising Situation

Another limitation of this supply curve is that workers must have a willingness to work. Workers have a specific amount of wage that drags them away from leisure. This wage is called reservation wage. This wage set an opportunity-cost-minimising situation for workers, as workers are always willing to attain the most output or high money they can. But if workers are not provided with enough wages to clear the reservation wage boundary, then the workers will not work. Instead, they consume their utility with leisure for a greater work-life balance.

Conclusion

In conclusion, a backward-bending labour supply curve is mostly affected by the wage rate in labor economics. According to the backward bending supply curve, the supply curve for an individual worker shows reduced supply when the wage rate rises after certain level. Backward-bending labor supply curve has also some limitations. These limitations state that workers should be allowed to choose their hours of work and should be paid high wages for overtime hours that workers worked.