

THE THEORY OF CONSUMER CHOICE : The Supply of Labor

1. Introduction: Work and Leisure

In modern microeconomic theory, human labor is viewed as a *commodity* to be traded in a market like apples, automobiles and so on. To be specific, with regard to human labor, what is traded in the market is not labor but *labor hours*. From a neoclassical economic perspective, the key issue is then to study how an individual whose primary interest is to maximize utility decides to use her/his scarce resource—the time for *work* and *leisure* or rest. In a given day, an individual has only twenty-four hours for these two competing ends. Thus, like many other theories in economics, the theory of labor supply (or the decision of a household to sell one's labor) is a theory of choice under scarcity. The scarcity is hours.

Neoclassical economics offers a rather peculiar differentiation between the time spent for work and leisure.

- First, *leisure* is thought as any use of time other than *work for pay (wages)*. Thus, leisure can be sitting in the sun or sleeping late. But, it can also be raising four children, writing novels, painting and so on.
- Second, it is viewed that leisure generates utility and work dis-utility. *Therefore, the only reason people work is for money.* In other words, individuals generate utility from work only *indirectly* through the utility generating capacity of income—the reward or compensation for work.

2. The Preference Function for an Individual Supplier of Labor: The Choice between Income and Leisure

From the above discussion, it follows that an individual supplier of labor is confronted with a choice between two utility-generating “composite” experiences, namely, income and leisure. If we let Y to represent income and X leisure, then the utility function of an individual supplier of labor can be expressed as follows:

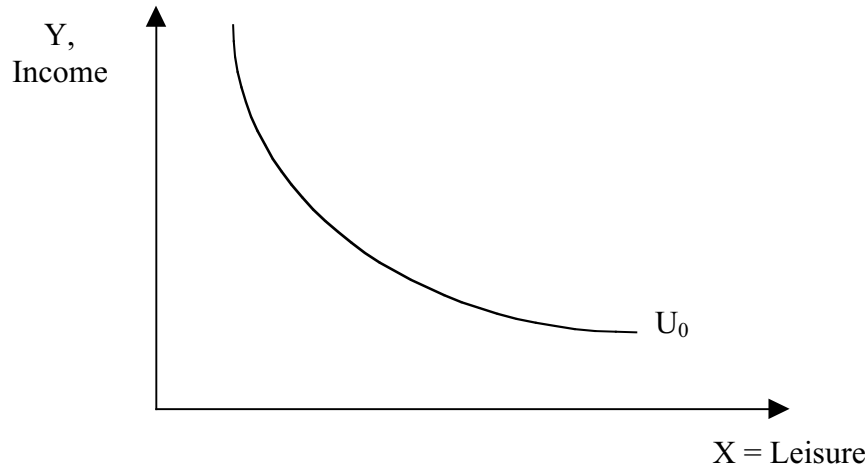
$$U = f(X, Y). \quad (1)$$

Furthermore, the following is assumed about the above utility function:

- $dU/dX > 0$ and $dU/dY > 0$. That is, the marginal utilities for both leisure and income are positive. Thus, *more is preferred to less*. Furthermore, d^2U/dX^2

and $d^2U/dY^2 < 0$. That is, for both goods *the law of diminishing marginal utility* holds.

- The indifference curve, the various bundles of commodities X and Y which provide an individual consumer with a constant level of satisfaction or utility, is convex from the origin as shown below.



- The slope of the above indifference curve measures the marginal rate of substitution of leisure for labor. For example, if $MRS_{x/y} = dY/dX = 3$, it suggests that an individual, on the basis of her subjective preference between income and leisure alone, is willing to trade one hour of her leisure time for \$3.0.

3. The Budget Constraint of an Individual Supplier of Labor:

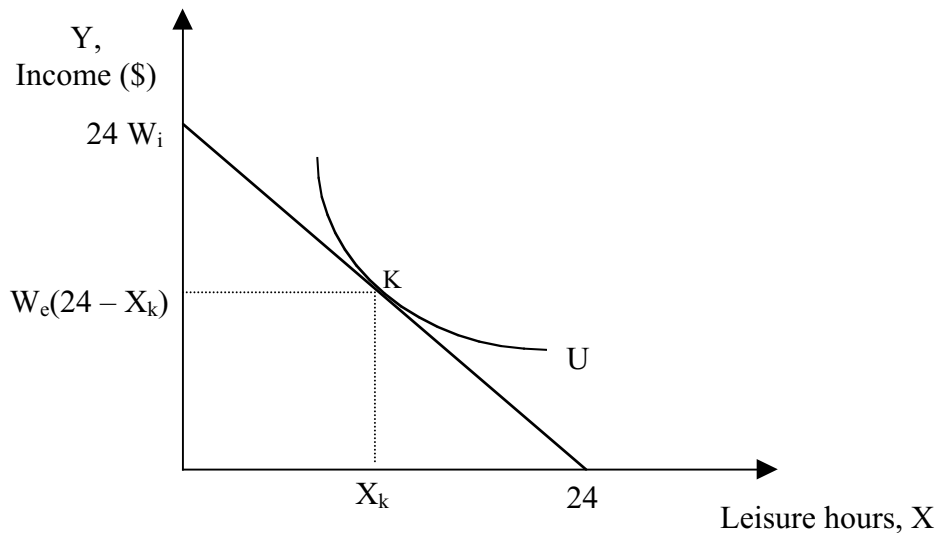
The budget constraint of the individual supplier of labor hour stem from the fact that the amount of time available for both leisurely and income generating activity is limited to twenty-four hours a day. For this reason, leisure (time spent not working for pay) has an *opportunity cost*. The measure of this opportunity cost is the market wage rate per hour.

To formally derive the budget equation of the individual labor supplier, let X represent the actual hours spent on leisurely activities per day and W_e the hourly market wage rate. Then, the budget constraint can be expressed as:

$$Y = W_e(24 - X). \quad (2)$$

Equation (2) simply states that, for a given day, the income of an individual from selling her labor, Y , depends on the market wage rate, W_e , and the actual hours taken for leisure, X . For a given wage rate, the more leisure an individual wishes to take the lower will be her income. In fact, each time leisure time is increased by an hour, income declines by exactly the wage rate, W_e . Thus, this reaffirms to what has been stated earlier that *wage* is the opportunity cost of leisure. For example, if the market wage is \$10 per hour, the cost (in terms of foregone income) of an hour spent on leisure is \$10. Finally, it is important to note that *the wage rate is the slope of the budget equation*.

Graphically, Equation (2) can be presented as follows:



4. The Optimal Working Hours: Another Application of the Equi-marginal Principle

The pertinent question is, given the market wage rate, at a point in time, how many hours should an individual work? A straightforward application of the Equi-marginal Principle dictates that *an individual will choose to work the number of hours (i.e. the quantity of labor supply) such that the wage rate (the opportunity cost of leisure) equals the marginal rate of substitution of leisure for labor ($MRS_{x/y}$)*. That is,

$$W_e = MRS_{x/y} = dY/dX. \quad (3)$$