Labor Supply

EE473

Supplement materials

Neo-Classical Model of Labor-Leisure Choice

Utility Function

- Measure of satisfaction individuals receive from consumption (C) of goods and leisure (L).
- $U = f(C, L)$
  - U is an index.
  - The higher is U, the happier is the person.

Decision

Individual may make a decision about

- Work or not work.
- If they work, how many working hours?
- Occupation and Industry.
- How long to work at this job? Migration?

Simple Model

- Trade off between leisure and consumption.
- Hours of leisure = total hours – working hours.
- Work more can generate more income and can consume more.

So, we need

- Indifferent curve (IC)
- Budget Line
- Maximization of Satisfaction (utility)

The Worker's Preferences

Neoclassical model of labor-leisure choice

- The model isolates the factors that determine whether a particular person works and, if so, how many hours she chooses to work.
- The representative person in our model receives satisfaction both from the consumption of goods (C) and from the consumption of leisure (L).

Utility

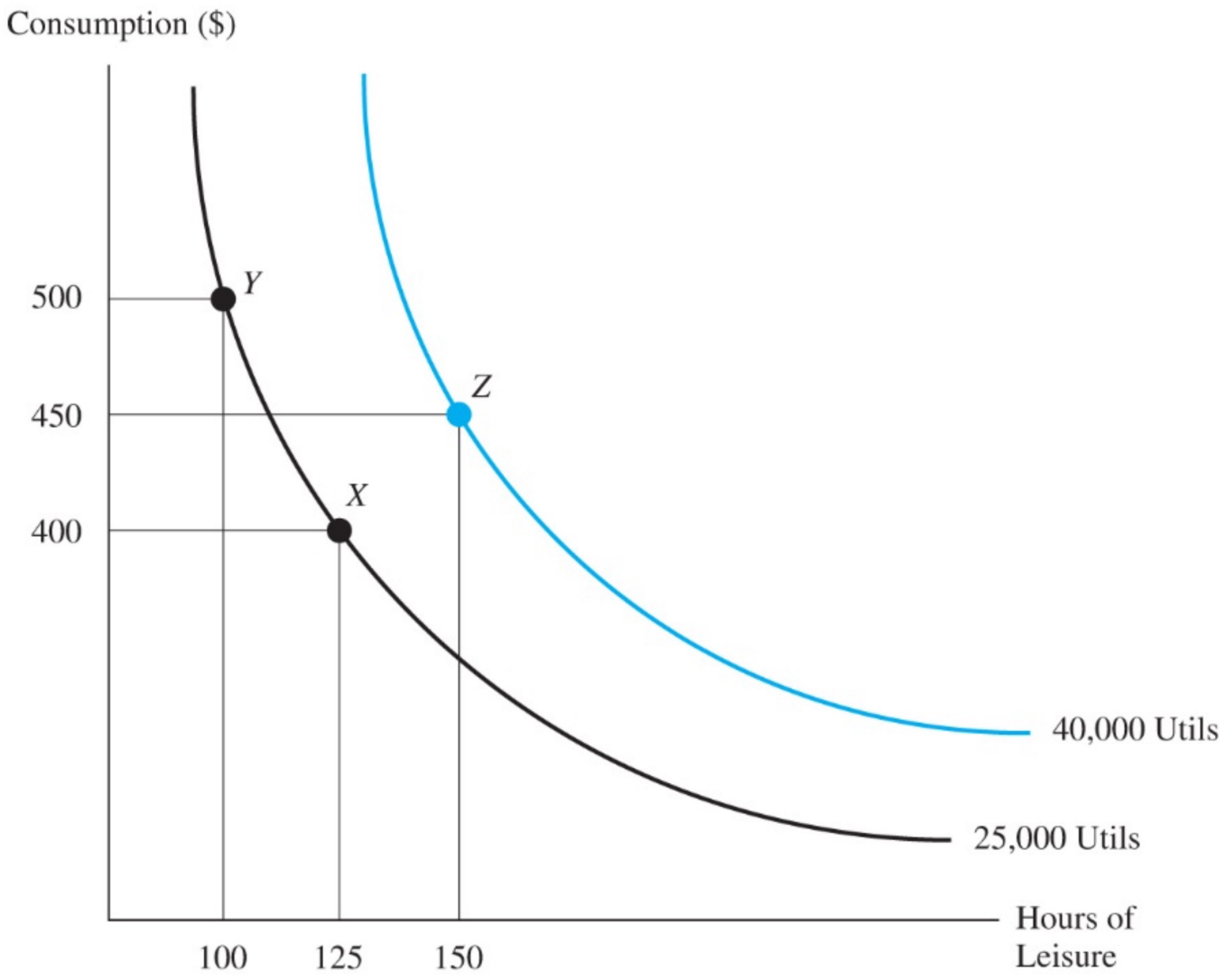
- The utility function transforms the person's consumption of goods and leisure into an index U that measures the individual's level of satisfaction or happiness.
- The higher the level of index U, the happier the person.
- We make assumption that buying more goods or having more leisure hours both increases the person's utility.

$$U = f(C, L)$$

Indifference Curves (IC)

Indifference curves have 4 important properties

1. Indifferent curves are downward sloping
2. Higher ICs indicate higher levels of utility
3. ICs do not intersect
4. ICs are convex to origin → Diminishing marginal rate of substitution



The Slope of an Indifference Curve

The marginal utility of leisure (MU_L)

- The change in utility resulting from an additional hour devoted to leisure activities, holding constant the amount of goods consumed.

The marginal utility of consumption (MU_C)

- The change in utility if the individual consumes one more dollar's worth of goods, holding constant the number of hours devoted to leisure activities.

Marginal rate of substitution (MRS) in consumption

The slope of the indifference curve measures the rate at which a person is willing to give up some leisure time in return for additional consumption, while holding utility constant.

$$\frac{\Delta C}{\Delta L} = -\frac{MU_L}{MU_C}$$

The Budget Constraint

The budget constraint defines the worker's opportunity set, indicating all of the consumption – leisure baskets the worker can afford.

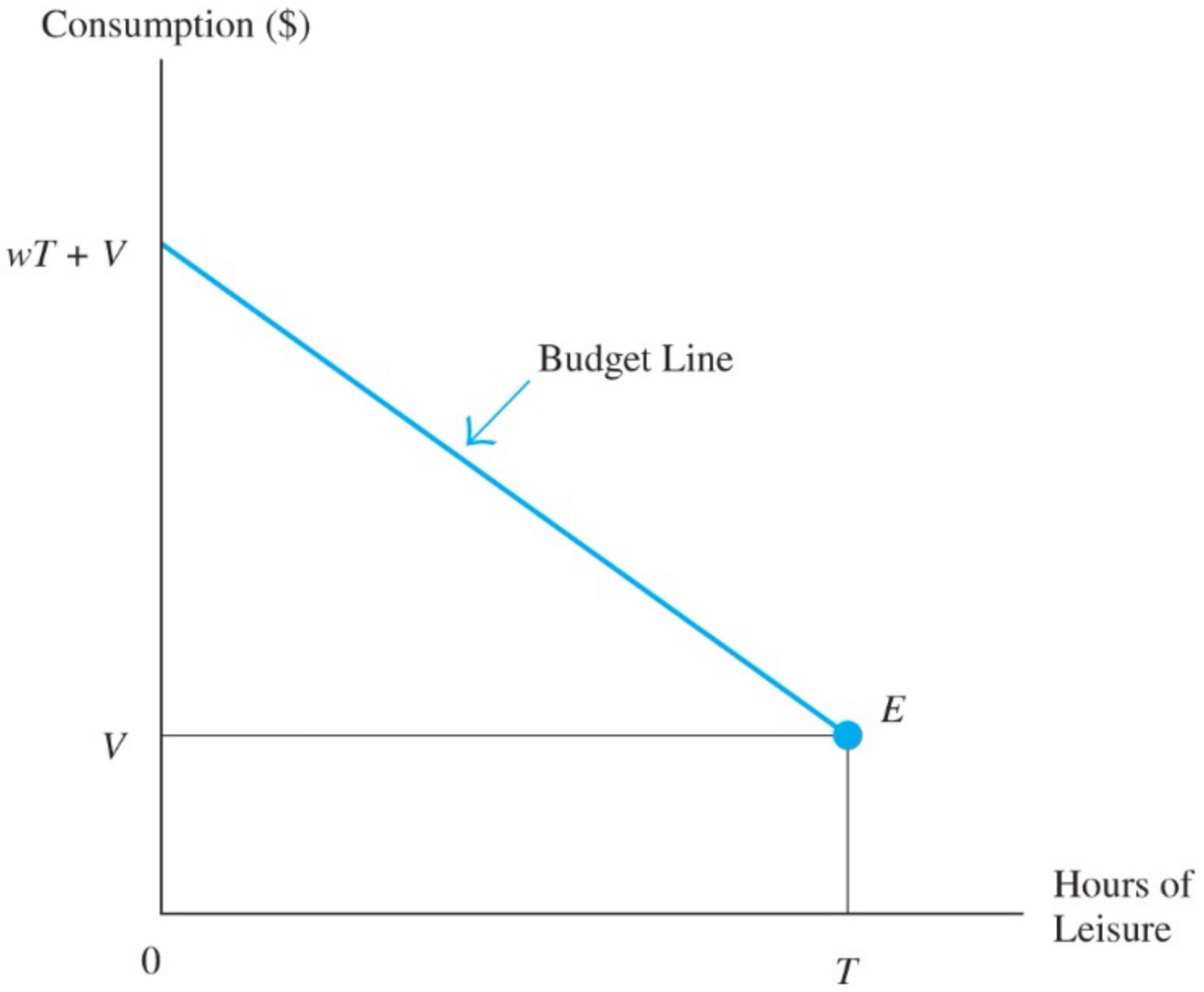
V = Nonlabor income

h = The number of hours the person will allocate to the labor market during the period

w = The hourly wage rate

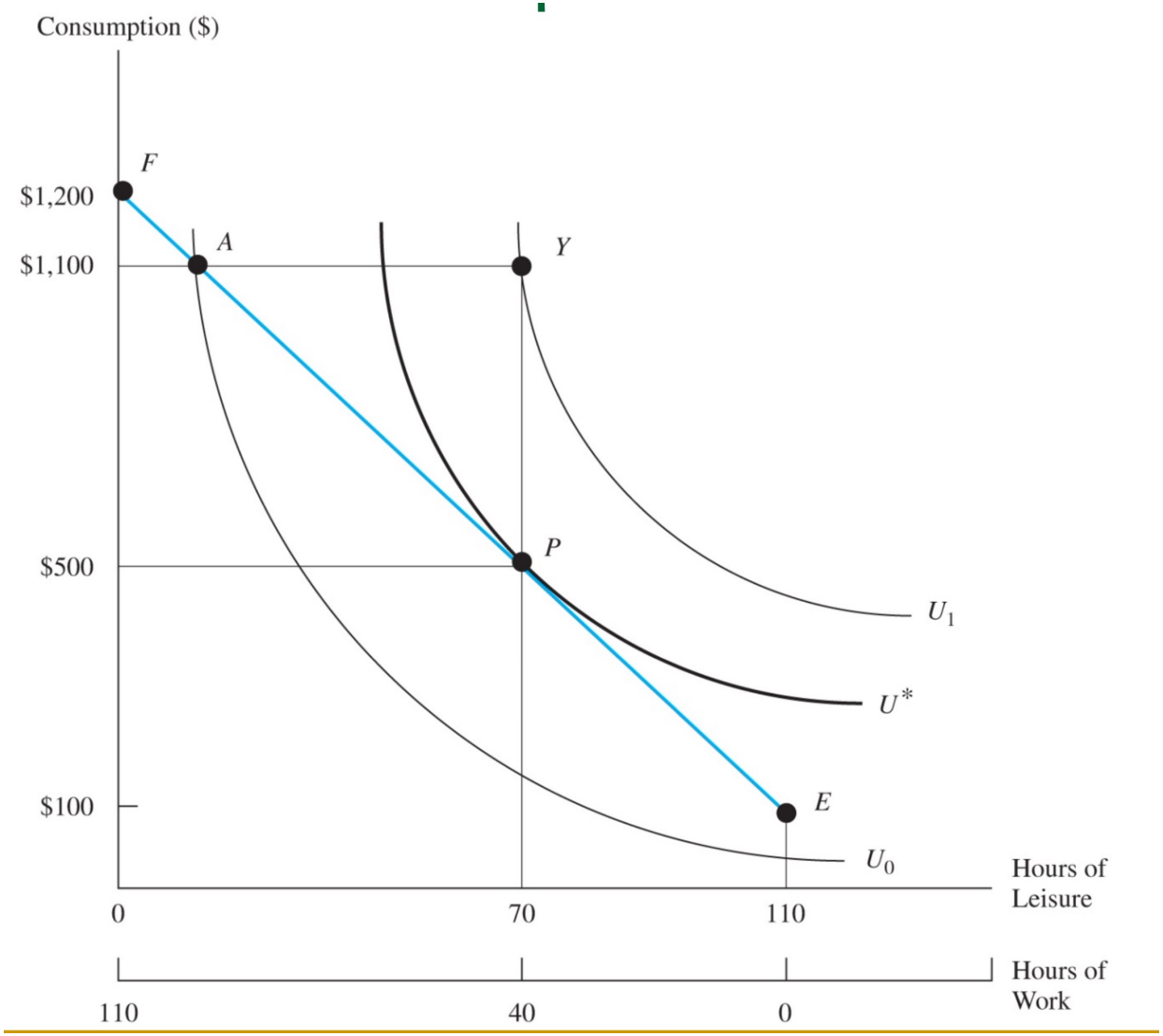
$$C = wh + V$$
$$T = h + L$$
$$C = w(T - L) + V$$
$$C = (wT + V) - wL$$

Graphing the Budget Constraint



Optimal Consumption and Leisure

- The person will choose the level of goods and leisure that lead to the highest possible level of the utility index U- given the limitations imposed by the budget constraint.
- Individuals choose consumption and leisure to maximize utility.
- Optimal consumption is given by the point where the budget line is tangent to the indifference curve.
  - At this point the marginal rate of substitution (MRS) between consumption and leisure equals the wage.
  - Any other consumption – leisure bundle on the budget constraint would give the individual less utility.



The Reservation wage

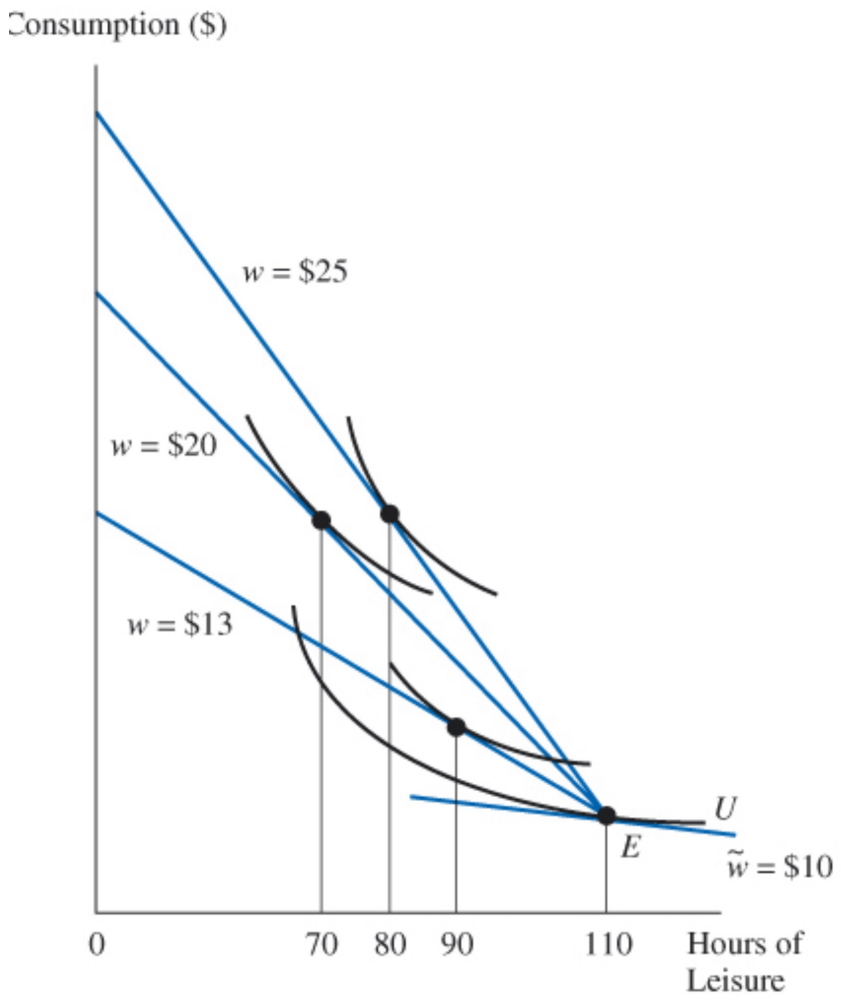
The reservation wage implies that

- The person will not work at all if the market wage is less than the reservation wage.
- The person will enter the labor market if the market wage exceeds the reservation wage.

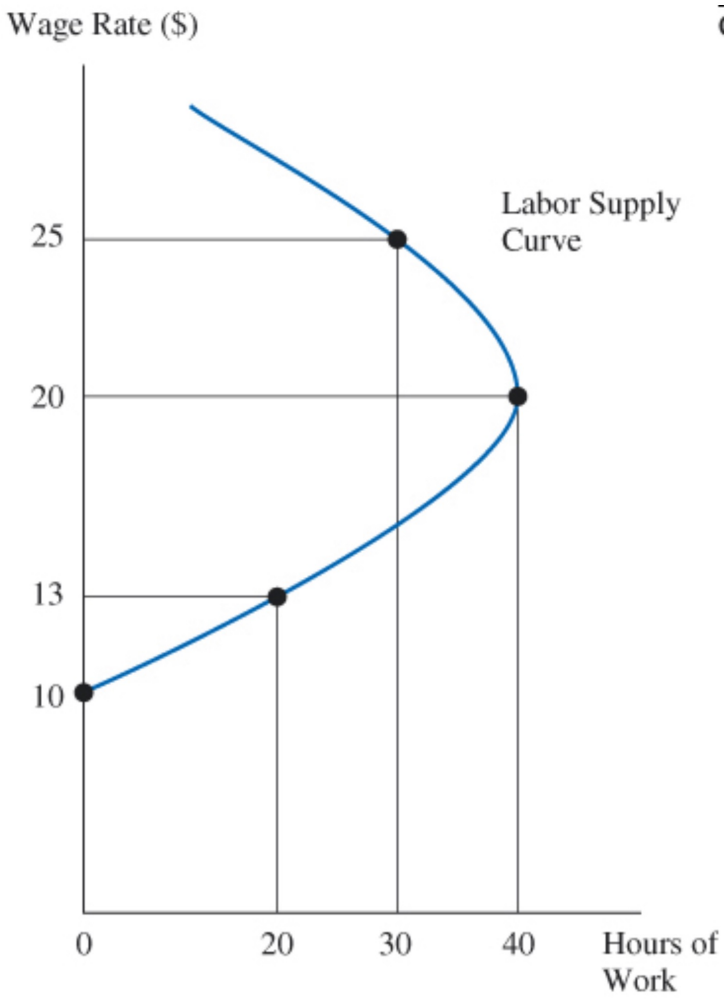
Labor Supply Curve

The predicted relation between hours of work and the wage rate is called **the labor supply curve**.

- At wages slightly above the reservation wage, **the labor supply curve is positively sloped** (the substitution effect dominates the income effect).
- If the income effect begins to dominate the substitution, hours of work decline as the wage rate increases (**a negatively sloped labor supply curve**).



(*a*) Optimal Consumption Bundles



(*b*) Relation between Optimal Hours of Work and the Wage Rate