

Labor Supply

Labor Economics

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Measuring the Labor Force

All persons aged 16 and older are classified as

- ▶ **Employed**
 - ▶ All those who have a job (US: an hour of paid or 15 hours of unpaid job)
- ▶ **Unemployed**
 - ▶ does not have a job;
 - ▶ available to start working;
 - ▶ searched for a job during last four weeks.
- ▶ **out of the labor force**
 - ▶ inactive/non-participants.



Labor Force: Definitions

LF = working + unemployed

Labor force participation rate = LF/P

Employment-population ratio = E/P

Unemployment rate = U/LF

Unemployment Rate

vs.

Hidden Unemployment

vs.

Economically Active Population



Neo-Classical Theory of Labor Supply

Basics:

- ▶ Preferences
- ▶ Constraints
- ▶ Choosing Hours to Work

- ▶ Income and Substitution Effects



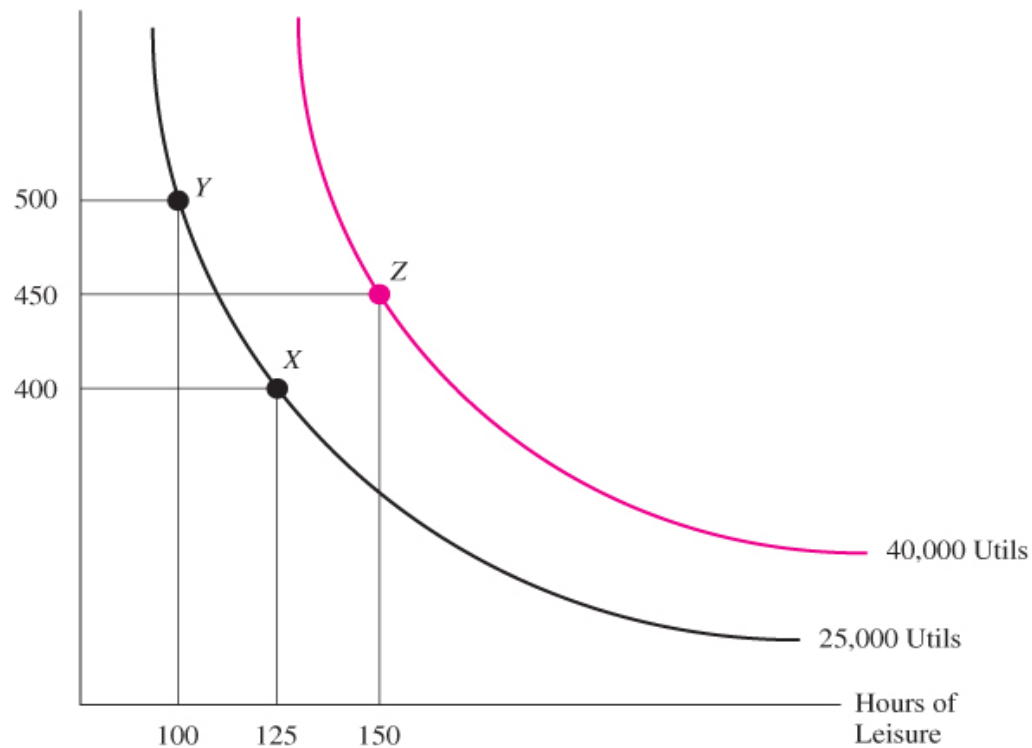
Labor-leisure choice model: Preferences

Worker's utility function is $U=f(C, L)$

FIGURE 2-2 Indifference Curves

Points X and Y lie on the same indifference curve and yield the same level of utility (25,000 utils); point Z lies on a higher indifference curve and yields more utility.

Consumption (\$)

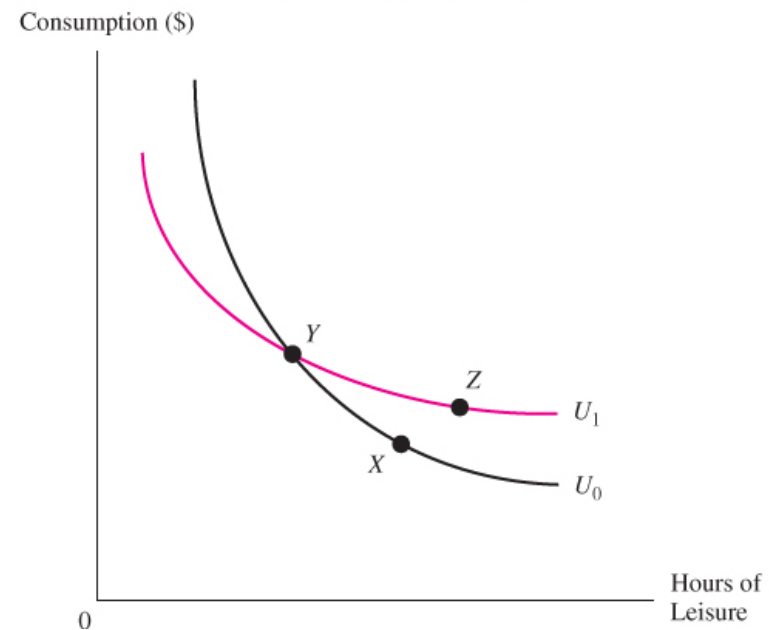


Labor-leisure choice model: Preferences

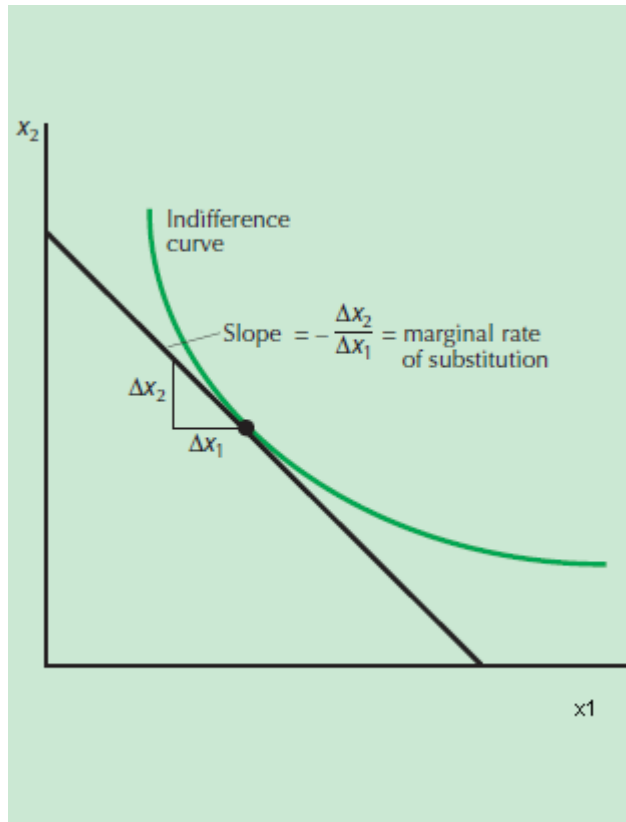
Properties of indifference curves (ICs):

- ▶ ICs are downward sloping: individuals prefer more of both C and L;
- ▶ Higher ICs indicate higher levels of utility;
- ▶ ICs do not intersect;
- ▶ ICs are convex to the origin.

FIGURE 2-3 Indifference Curves Do Not Intersect



Marginal Rate of Substitution



Definition:

Marginal Rate of Substitution (MRS) is the rate at which the consumer is just willing to substitute one good for the other

► MRS is the (absolute of the)

slope of an indifference curve at a particular point:

$$\frac{\Delta x_2}{\Delta x_1} \text{ or } \frac{dx_2}{dx_1}$$

Preferences

- ▶ They *may* differ from person to person!!!
- ▶ They *may not* change for the person!

- ▶ Other questions and comments



Constraints

- ▶ Time constraint: $T = h + L$
- ▶ Budget constraint: $C = wh + V$

Full-income budget constraint:

$$C + wL = wT + V$$

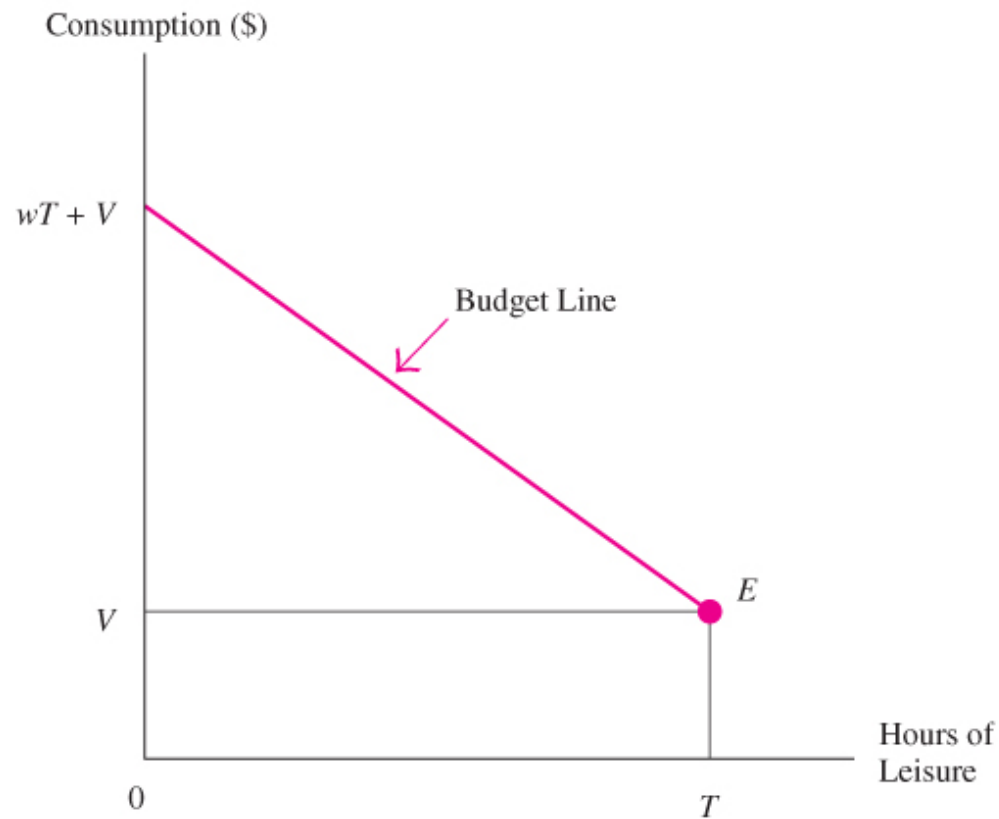
- ▶ $wT + V$ maximum person could earn if working T hours of the day;
 - ▶ wL amount of full income spent on leisure
- (Note: price of an hour of leisure is the wage rate).



Constraints

FIGURE 2-5 The Budget Line Is the Boundary of the Worker's Opportunity Set

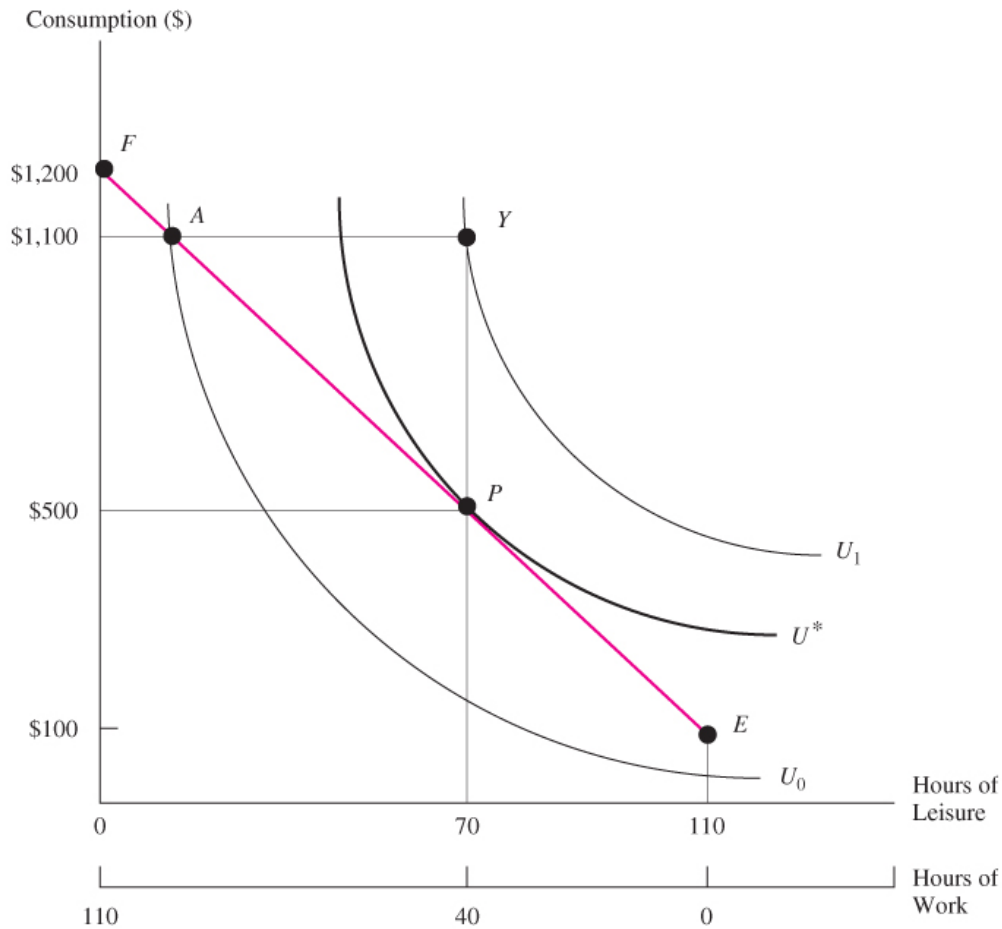
Point E is the endowment point, telling the person how much she can consume if she does not enter the labor market. The worker moves up the budget line as she trades off an hour of leisure for additional consumption. The absolute value of the slope of the budget line is the wage rate.



Choosing Hours to Work: Graph

FIGURE 2-6 An Interior Solution to the Labor-Leisure Decision

A utility-maximizing worker chooses the consumption-leisure bundle given by point P , where the indifference curve is tangent to the budget line.



Choosing Hours to Work: Math

Problem:

$$\begin{aligned} \max U &= f(C, L) \text{ s.t.} \\ C + wL &= wT + V \end{aligned}$$

Solution:

$$\frac{\partial U / \partial L}{\partial U / \partial C} = w$$



Next lecture

Case Studies

- ▶ Rise in non-labor income
- ▶ Rise in salary

- ▶ Entering labor market
 - ▶ Reservation wage

