

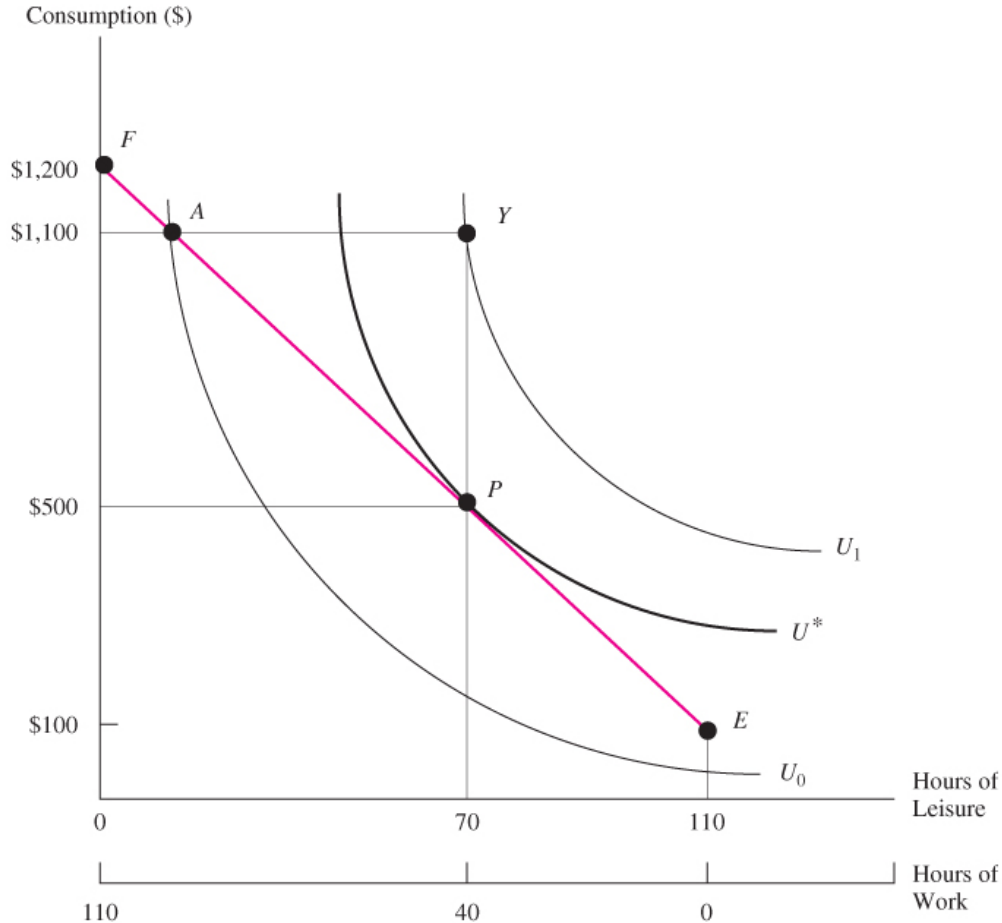
Labor Supply

Labor Economics
VSE Praha
March 2010

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.



Labor-Leisure Decision

Case Studies

- ▶ **Entering labor market**
 - ▶ Reservation wage
- ▶ **Rise in non-labor income**
- ▶ **Rise in salary**
 - ▶ Income and substitution effects
- ▶ **Policy applications**
 - ▶ Welfare programs

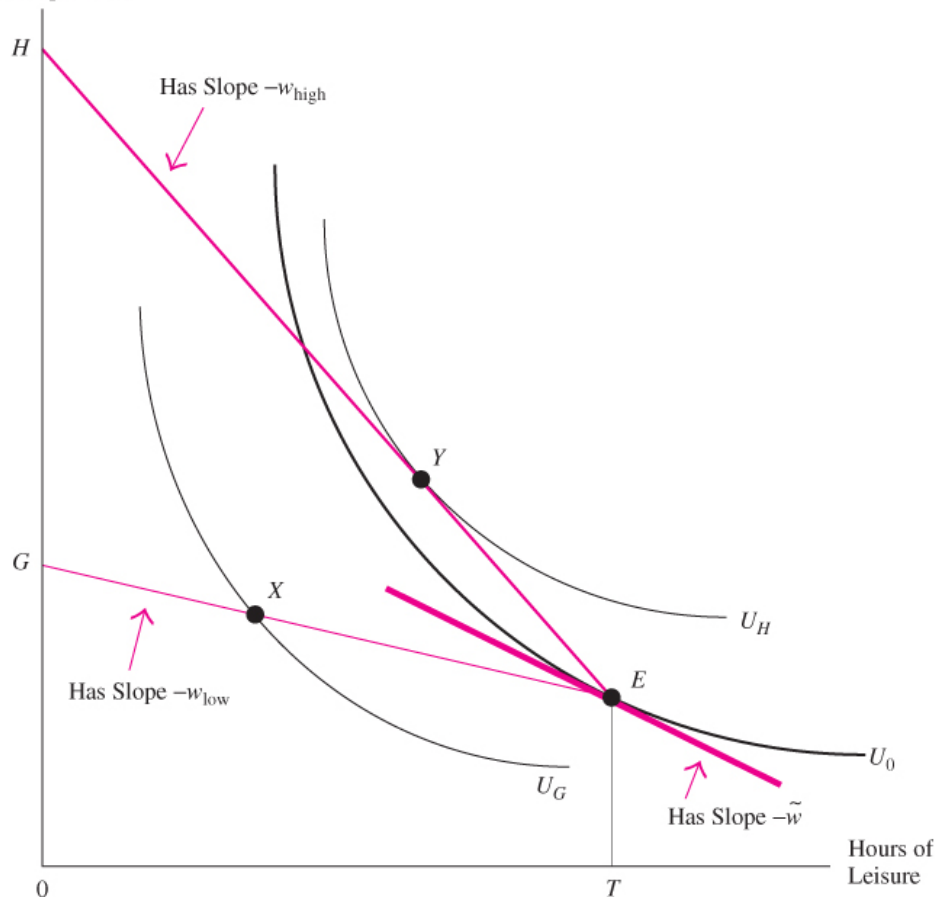


To work or not to work?

FIGURE 2-10 The Reservation Wage

If the person chooses not to work, she can remain at the endowment point E and get U_0 units of utility. At a low wage (w_{low}), the person is better off not working. At a high wage (w_{high}), she is better off working. The reservation wage is given by the slope of the indifference curve at the endowment point.

Consumption (\$)



Increase in Non-labor Income

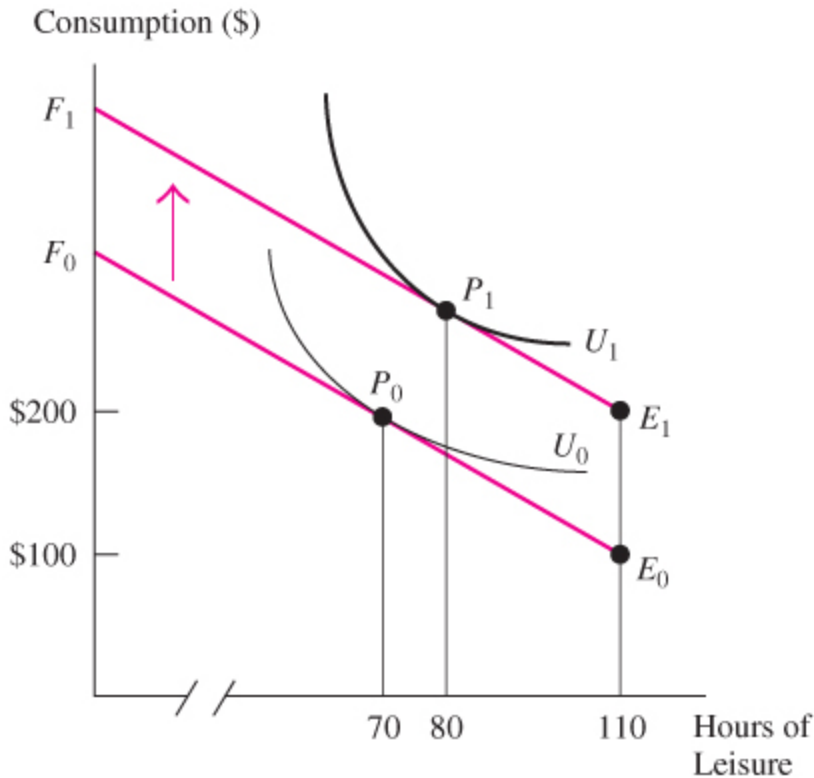
- ▶ How would extra non-labor income affect the leisure/consumption decision?
 - ▶ Less leisure, less consumption
 - ▶ Less leisure, more consumption
 - ▶ More leisure, less consumption
 - ▶ More leisure and more consumption



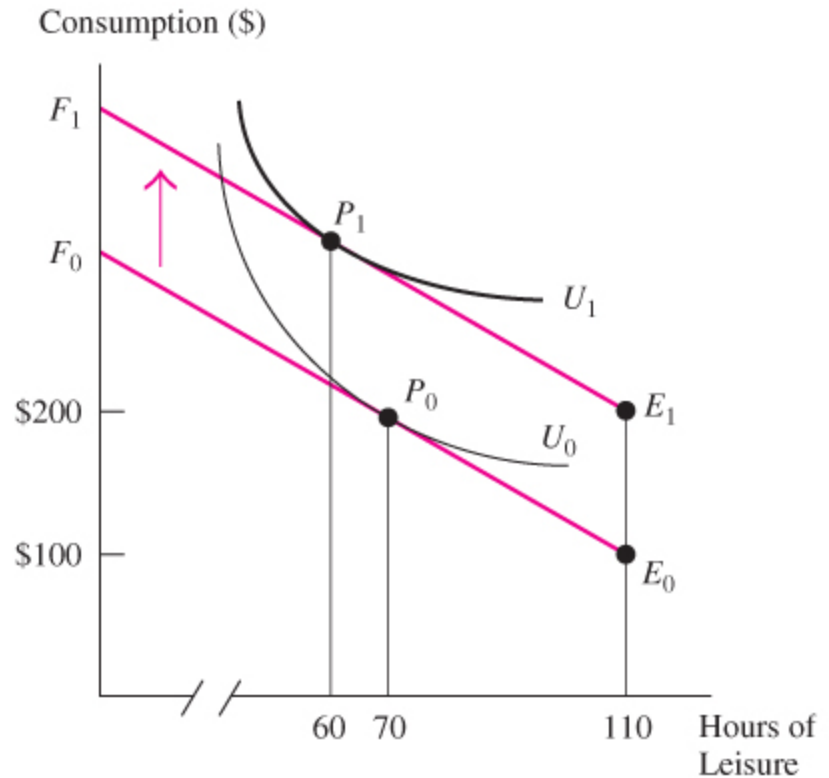
Non-labor income and hours of work

FIGURE 2-7 The Effect of a Change in Nonlabor Income on Hours of Work

An increase in nonlabor income leads to a parallel, upward shift in the budget line, moving the worker from point P_0 to point P_1 . (a) If leisure is a normal good, hours of work fall. (b) If leisure is an inferior good, hours of work increase.



(a) Leisure Is a Normal Good



(b) Leisure Is an Inferior Good

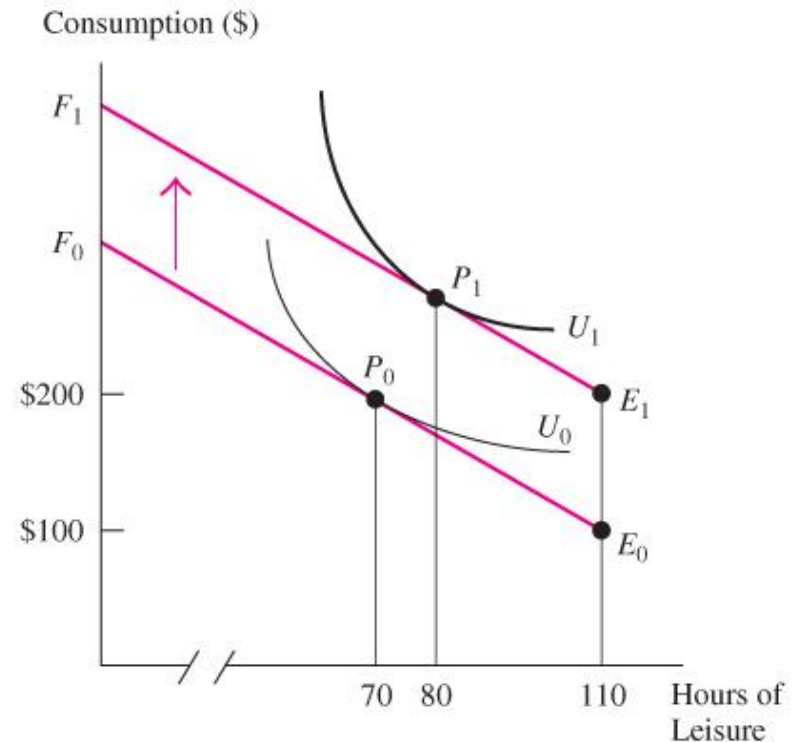
Non-labor income and hours of work

Assumption (confirmed with data)

► The Income Effect

(change in the number of leisure-hours caused by a change in the non-labor income)

is always positive.



(a) Leisure Is a Normal Good

Increase in Wage Rate

- ▶ How would increased wage rate affect the leisure/consumption decision?
 - ▶ Less leisure, less consumption
 - ▶ Less leisure, more consumption
 - ▶ More leisure, less consumption
 - ▶ More leisure, more consumption

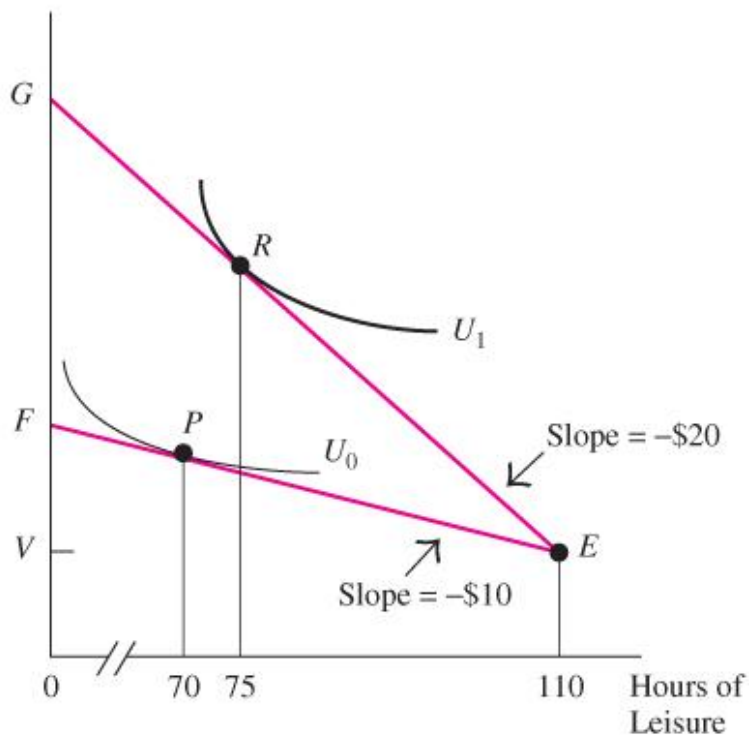


The wage rate and hours of work

FIGURE 2-8 The Effect of a Change in the Wage Rate on Hours of Work

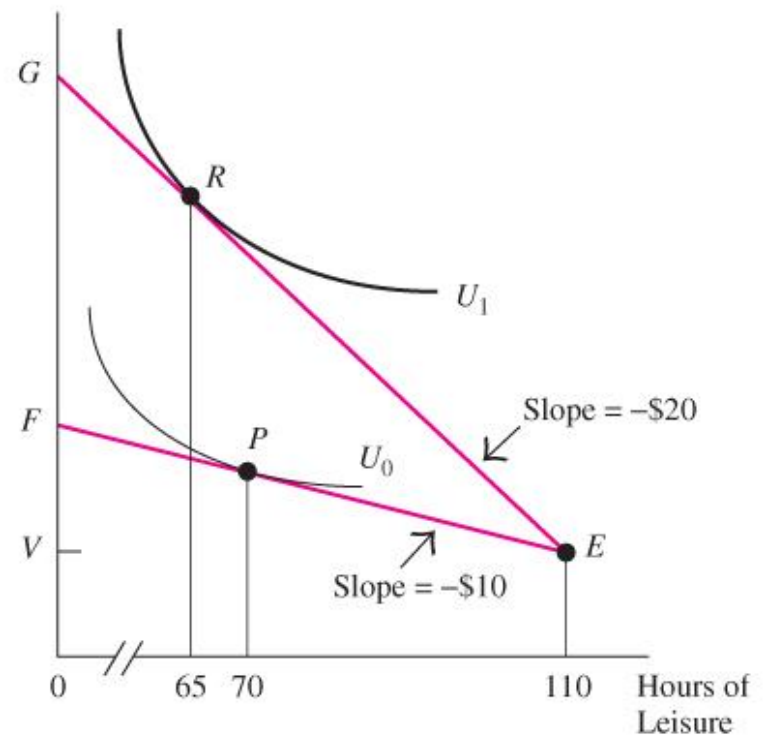
A change in the wage rate rotates the budget line around the endowment point E . A wage increase moves the worker from point P to point R , and can either decrease or increase hours of work.

Consumption (\$)



(a)

Consumption (\$)



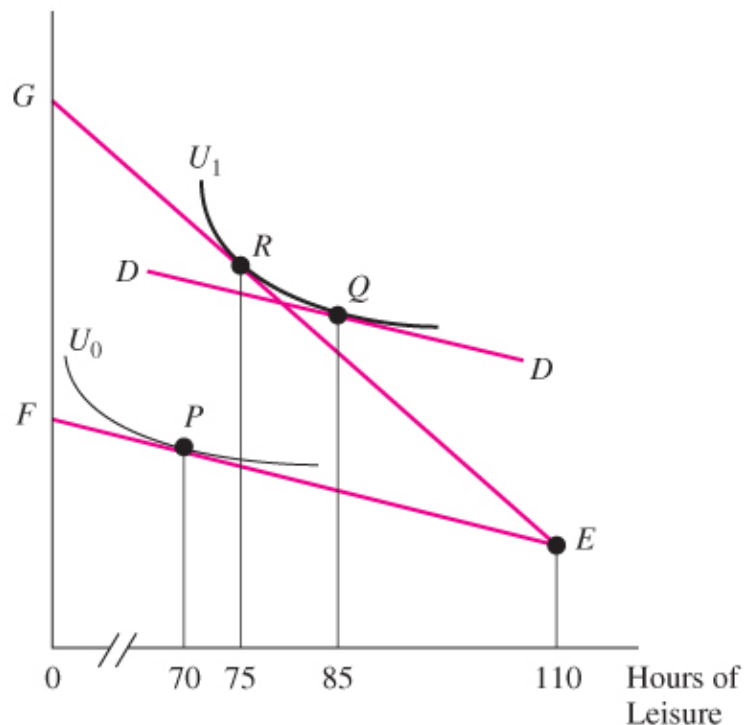
(b)

Substitution and Income Effects

FIGURE 2-9 Decomposing the Impact of a Wage Change into Income and Substitution Effects

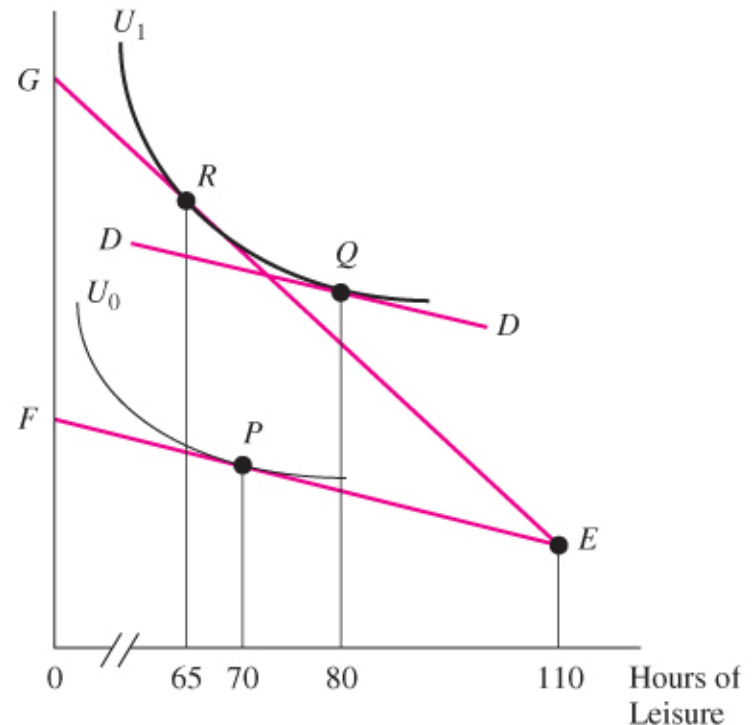
An increase in the wage rate generates both income and substitution effects. The income effect (the move from point P to point Q) reduces hours of work; the substitution effect (the move from Q to R) increases hours of work.

Consumption (\$)



(a) Income Effect Dominates

Consumption (\$)



(b) Substitution Effect Dominates

Numerical Example

Julieta's preferences for consumption and leisure can be expressed as

$U(C,L)=(C-200)\cdot(L-80)$. There are 168 hours in the week available to split between work and leisure. Julieta earns \$5 per hour after taxes. She also receives \$320 worth of welfare benefits each week regardless of how much she works.

- (a) Graph her budget line
 - (b) Derive Julieta's MU_L and MU_C
 - (c) Find Julieta's MRS when $L=100$ and she is on her BL
 - (d) Find Julieta's reservation wage
 - (e) Find Julieta's optimal amount of consumption and leisure
-



Labor Supply

- ▶ Individual labor supply
- ▶ Market labor supply

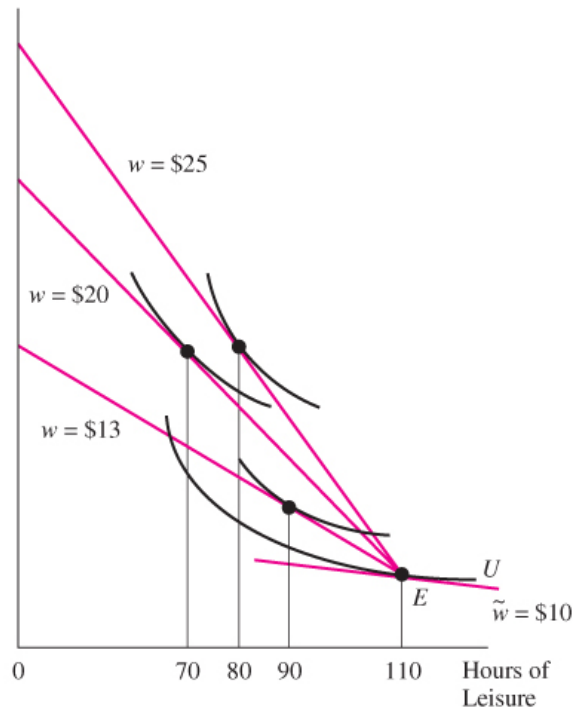


The Labor Supply Curve: Individual

FIGURE 2-11 Deriving a Labor Supply Curve for a Worker

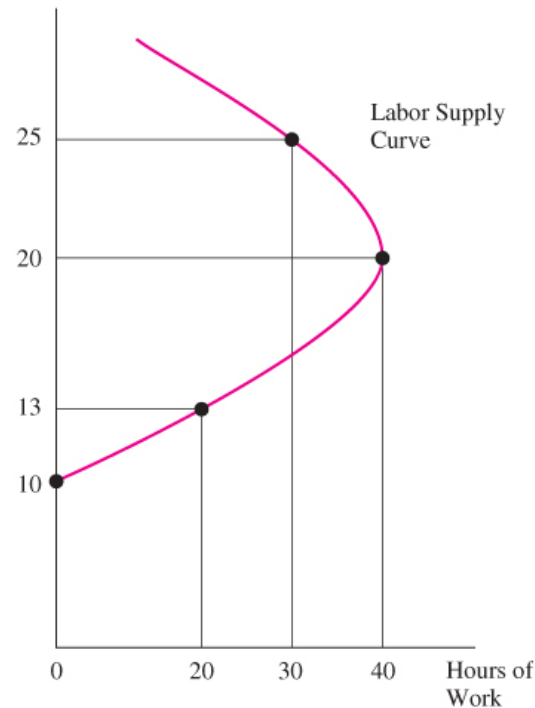
The labor supply curve traces out the relationship between the wage rate and hours of work. At wages below the reservation wage (\$10), the person does not work. At wages higher than \$10, the person enters the labor market. The upward-sloping segment of the labor supply curve implies that substitution effects are stronger initially; the backward-bending segment implies that income effects may dominate eventually.

Consumption (\$)



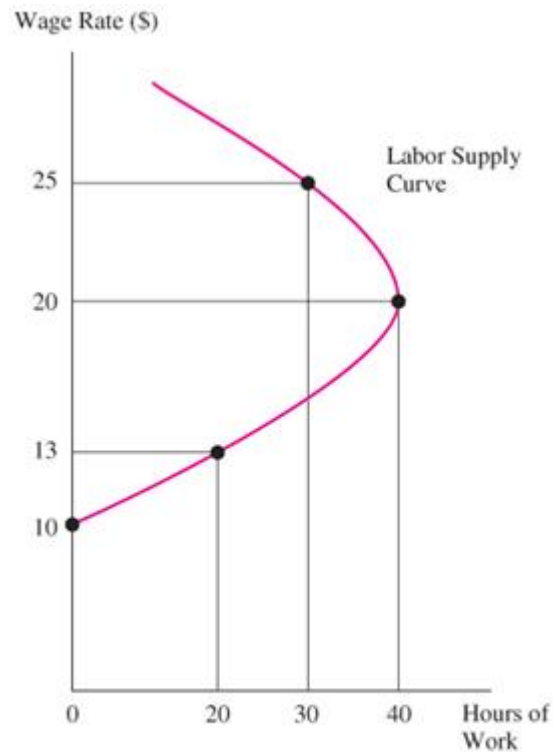
(a) Optimal Consumption Bundles

Wage Rate (\$)



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

The Labor Supply Curve: Elasticity



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

- ▶ Percentage change in hours of work associated with one percent change in the wage rate

$$\sigma = \frac{\frac{\Delta h}{h}}{\frac{\Delta w}{w}} = \frac{\% \Delta h}{\% \Delta w}$$

$$\sigma = \frac{\Delta h}{\Delta w} \cdot \frac{w}{h} = \frac{\partial h}{\partial w} \cdot \frac{w}{h}$$

The Labor Supply Curve: Market

FIGURE 2-12 Derivation of the Market Labor Supply Curve from the Supply Curves of Individual Workers

The market labor supply curve “adds up” the supply curves of individual workers. When the wage is below \tilde{w}_A , no one works. As the wage rises, Alice enters the labor market. If the wage rises above \tilde{w}_B , Brenda enters the market.



Policy Applications

- ▶ Cash grants
- ▶ Welfare programs
- ▶ Tax credit

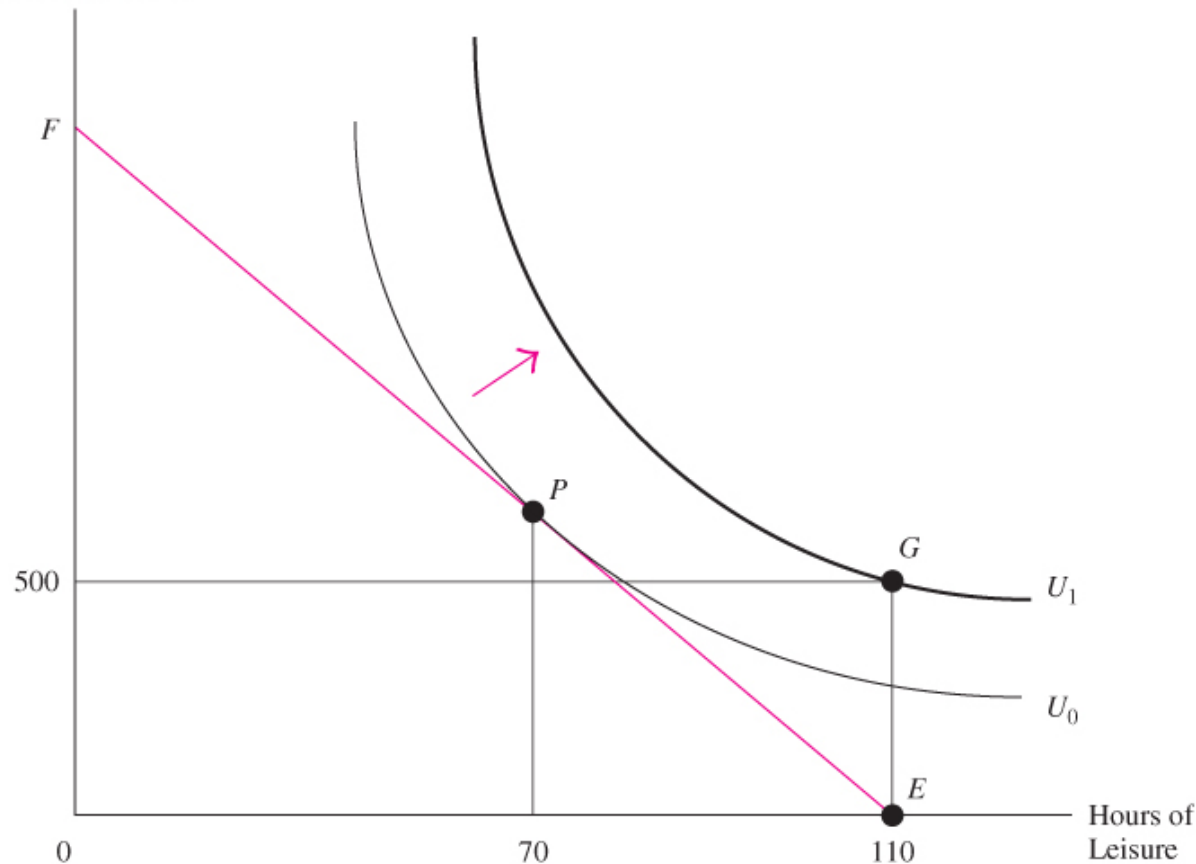


Policy Application: Cash grants and LS

FIGURE 2-14 Effect of a Cash Grant on Work Incentives

A take-it-or-leave-it cash grant of \$500 per month moves the worker from point P to point G , and encourages the worker to leave the labor force.

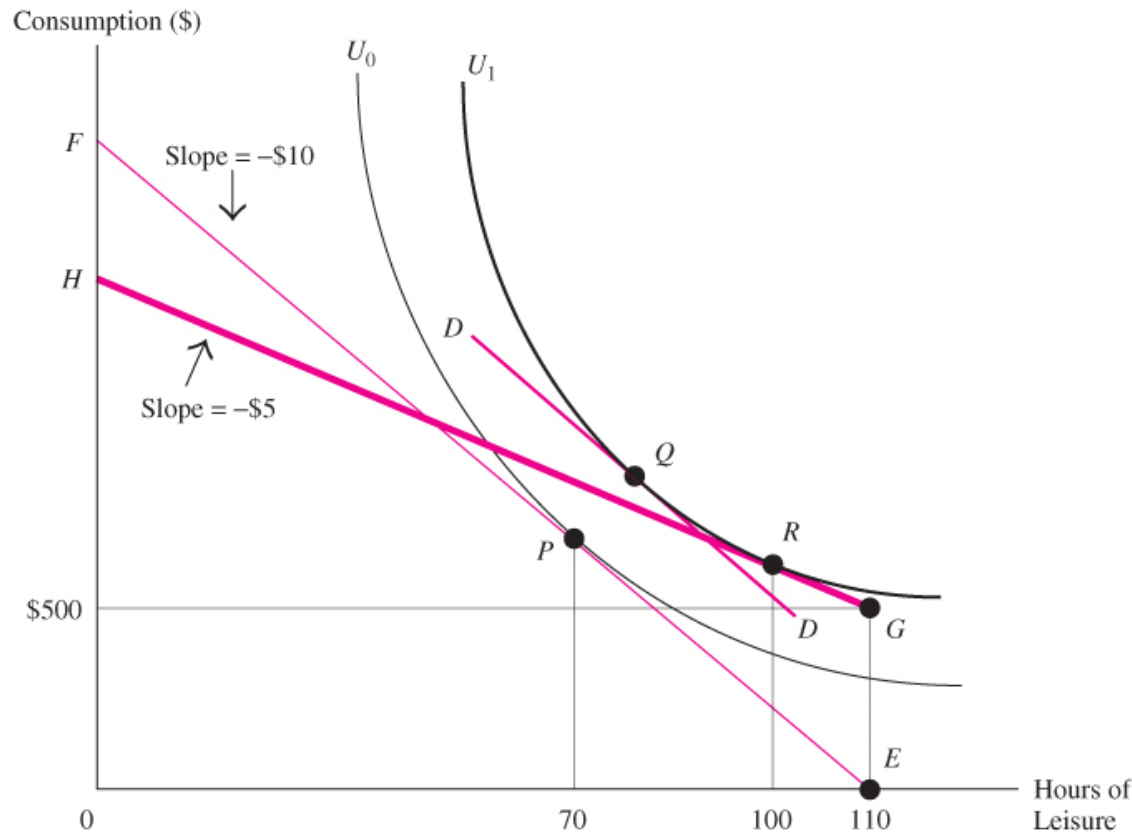
Consumption (\$)



Policy Application: Welfare Programs

FIGURE 2-15 Effect of a Welfare Program on Hours of Work

A welfare program that gives the worker a cash grant of \$500 and imposes a 50 percent tax on labor earnings reduces work incentives. In the absence of welfare, the worker is at point P . The income effect resulting from the program moves the worker to point Q ; the substitution effect moves the worker to point R . Both income and substitution effects reduce hours of work.



Policy Application: Tax Credit

FIGURE 2-16 The EITC and the Budget Line (not drawn to scale)

In the absence of the tax credit, the budget line is given by FE . The EITC grants the worker a credit of 40 percent on labor earnings as long she earns less than \$11,000. The credit is capped at \$4,400. The worker receives this maximum amount as long as she earns between \$11,000 and \$14,370. The tax credit is then phased out gradually. The worker's net wage is 21.06 cents below her actual wage whenever she earns between \$14,370 and \$35,263.

