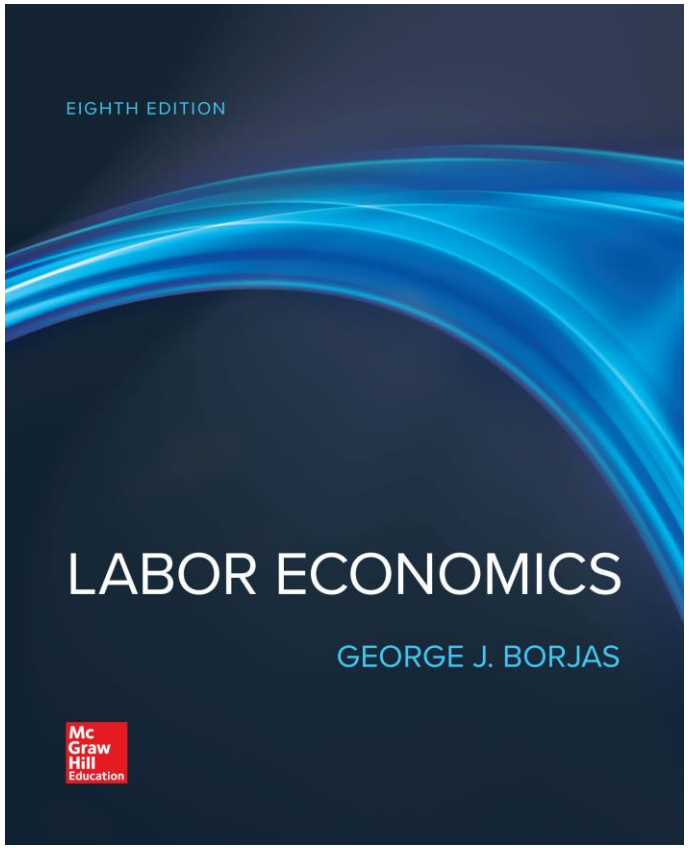
Mc Graw Hill Education

Chapter 2

Labor Supply



"It's true hard work never hurt anybody, but I figure, why take the chance?"
-Ronald Reagan

Introduction to Labor Supply

Labor facts

- Men: labor force participation rates declined from 80% in 1900 to 71% in 2010.
- Women: labor force participation rates rose from 21% in 1900 to 60% in 2010.
- Hours worked fell from 40 to 34 per week during the same time period.

Measuring the Labor Force

Current population survey (CPS)

- Labor Force = Employed + Unemployed
  - LF = E + U
  - Size of LF does not tell us about "intensity" of work.

- Labor Force Participation Rate
  - LFPR = LF/P
  - P = civilian adult population 16 years or older not in institutions.

Measuring the Labor Force

Current population survey (CPS)

- Employment: Population Ratio (percent of population that is employed).
  - EPR = E/P
- Unemployment Rate
  - UR = U/LF

Measuring the Labor Force

Labor force measurement relies on subjectivity and likely understates the effects of a recession.

Hidden unemployed: persons who have given up in their search for work and have therefore left the labor force.

The employment rate (E/P) can be a better measure of fluctuations in economic activity than the unemployment rate.

Labor Force Participation Facts

Labor force participation (LFP) is greatest for all groups during the ages of 25 to 55.

LFP increases with education.

LFP has decreased for men over the age of 65 from 63% in 1900 to under 22% by 2010.

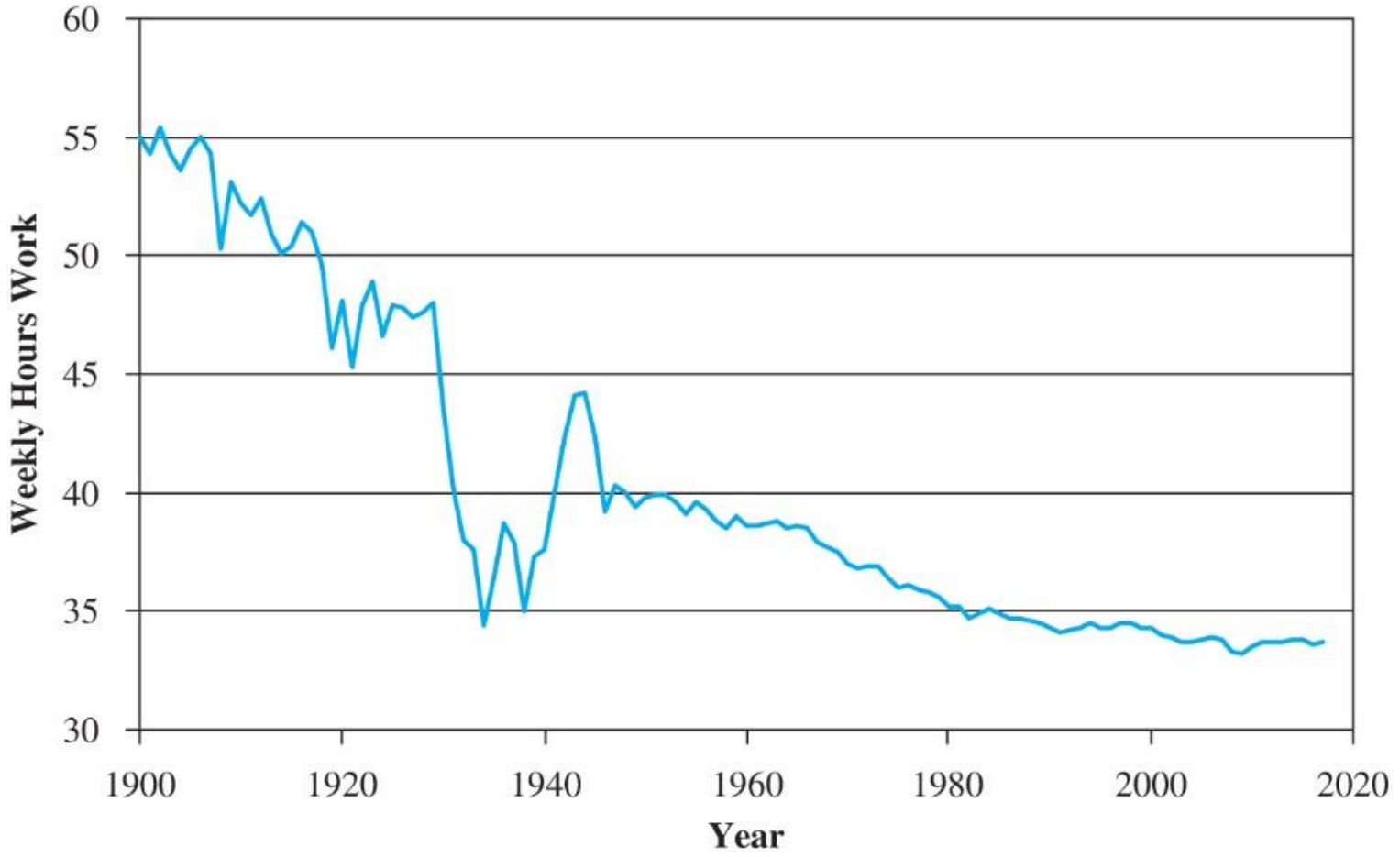
Labor Force Participation Facts

More women than men work part-time.

More men who are high school drop outs work than women who are high school drop outs.

White men have higher participation rates and hours of work than black men.

Average weekly hours of work of production workers, 1900-2013



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.

Indifference Curves

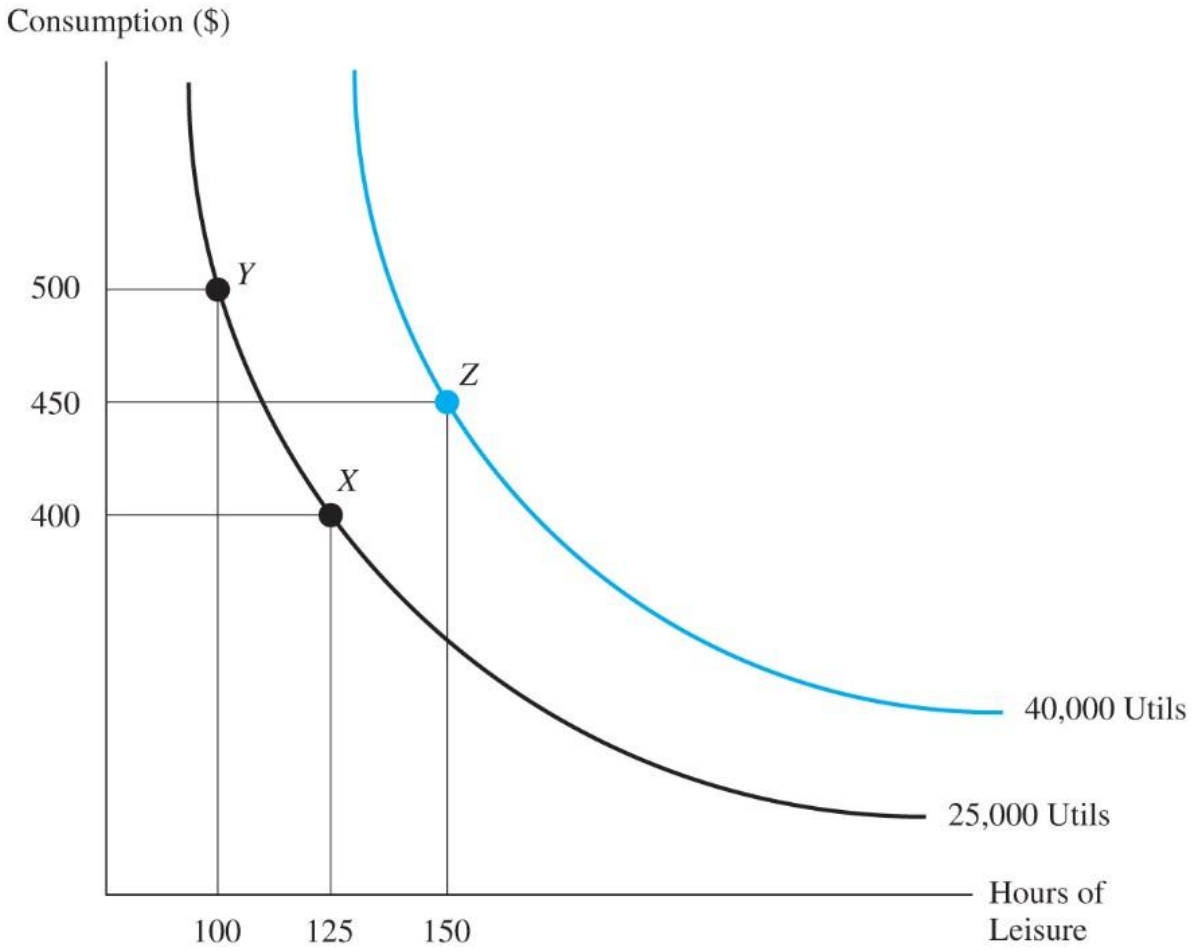
Downward sloping, indicating the tradeoff between consumption and leisure.

Higher curves = higher utility.

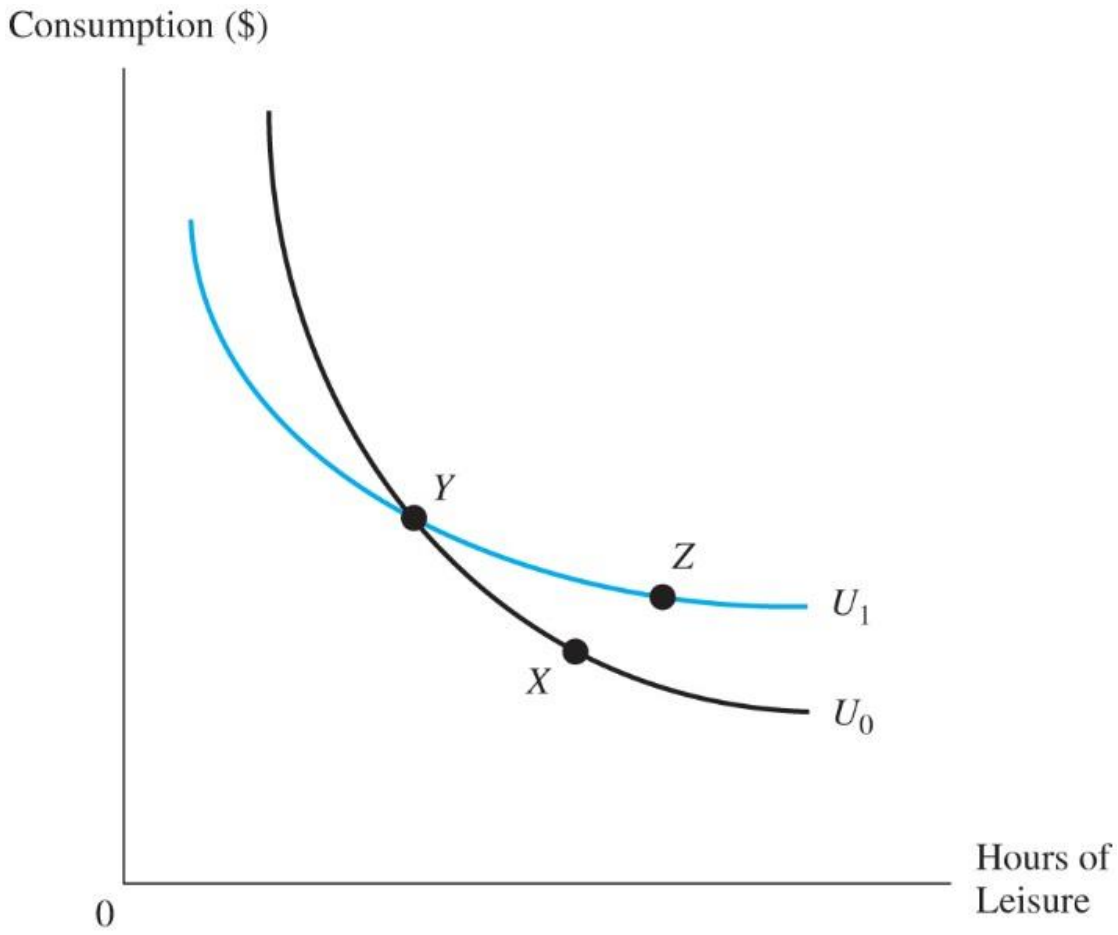
Do not intersect.

Convex to the origin, indicating that opportunity costs increase.

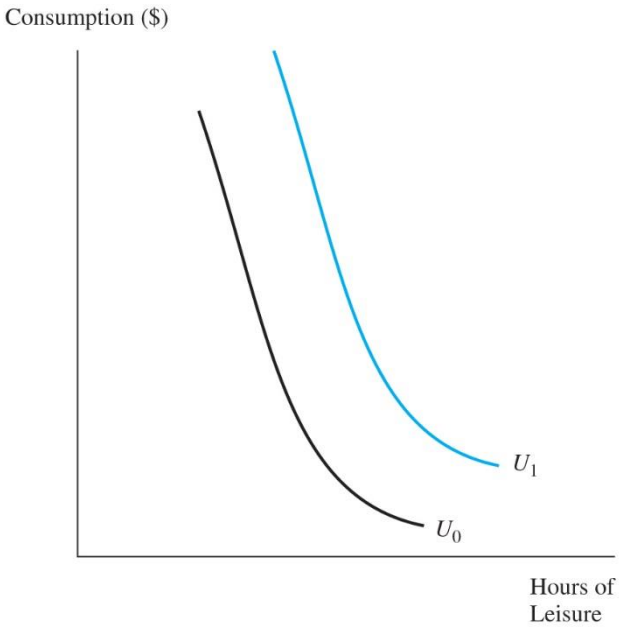
Indifference Curves



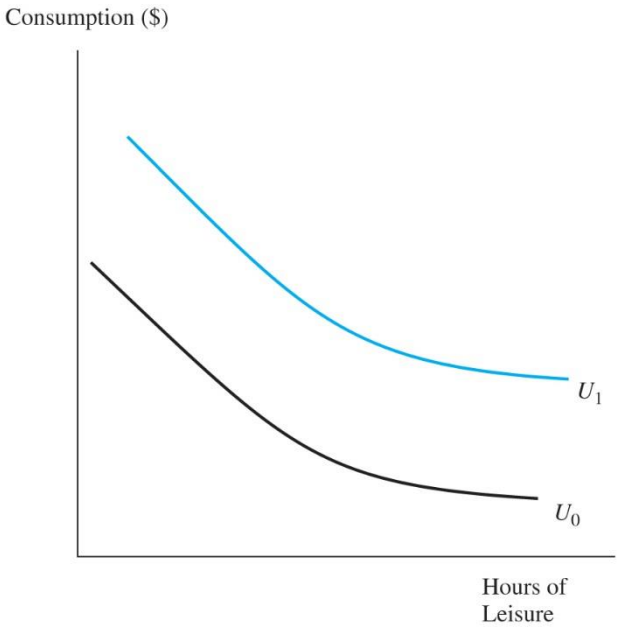
Indifference Curves Cannot Cross



Differences in Preferences



(*a*) Cindy's Indifference Curves



(*b*) Mindy's Indifference Curves

Workers with steeper indifference curves value their leisure relatively more than workers with shallower indifference curves.

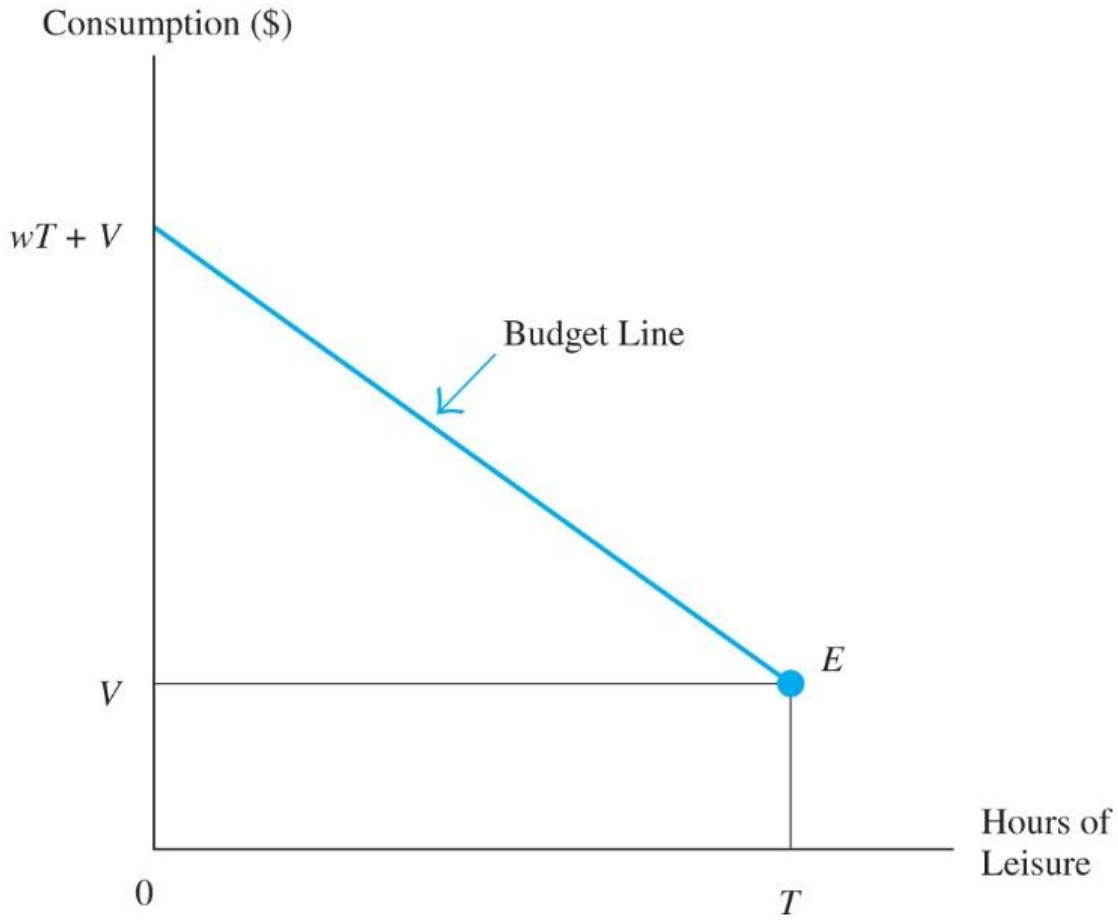
The Budget Constraint

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

$C = wh + V$

- Consumption equals labor earning (wages $\times$ hours of work) plus nonlabor income (V).
- As $h = T - L$, can rewrite $C = w(T - L) + V$.

Graphing the Budget Constraint



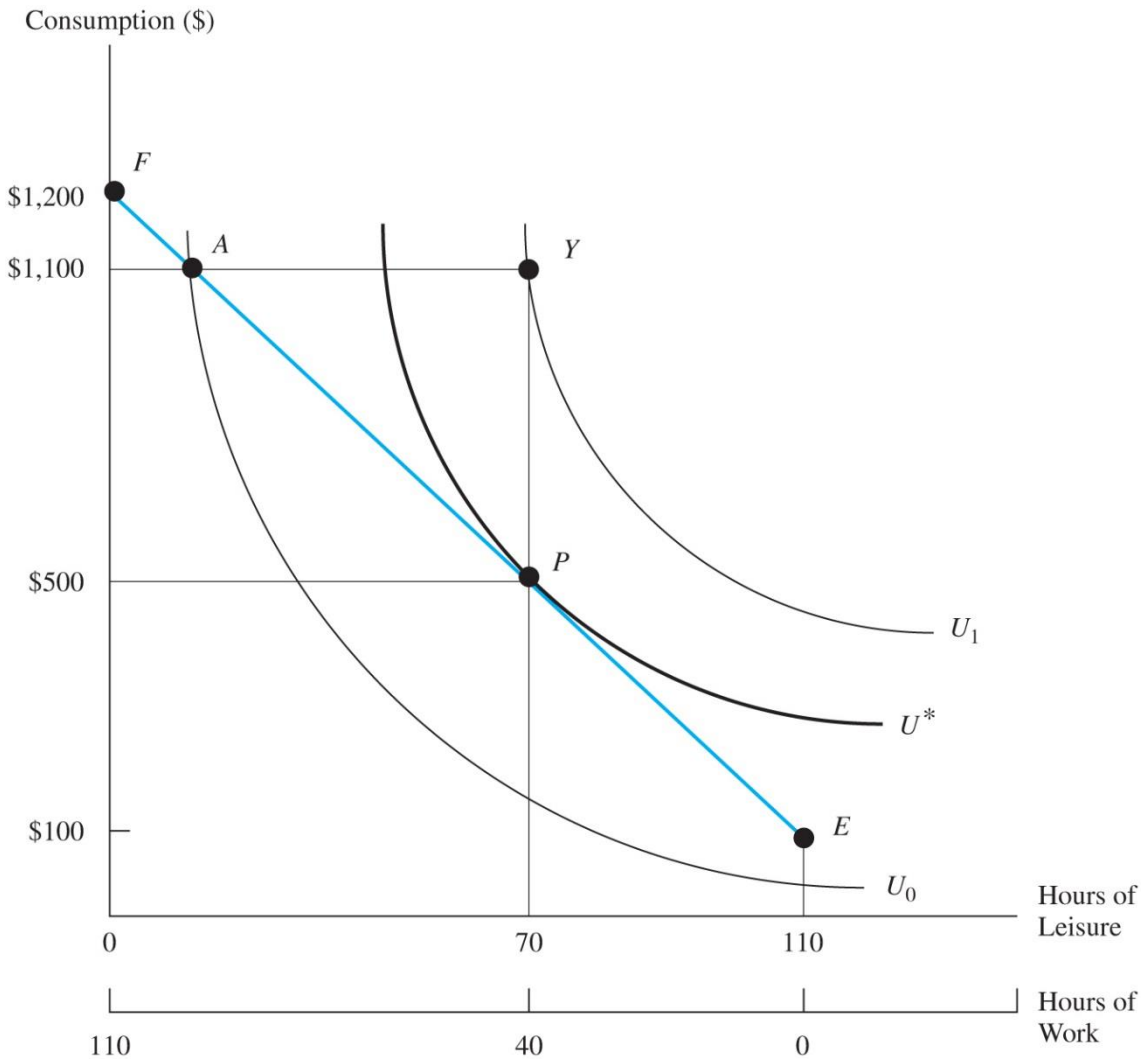
The Hours of Work Decision

Individuals choose consumption and leisure to maximize utility.

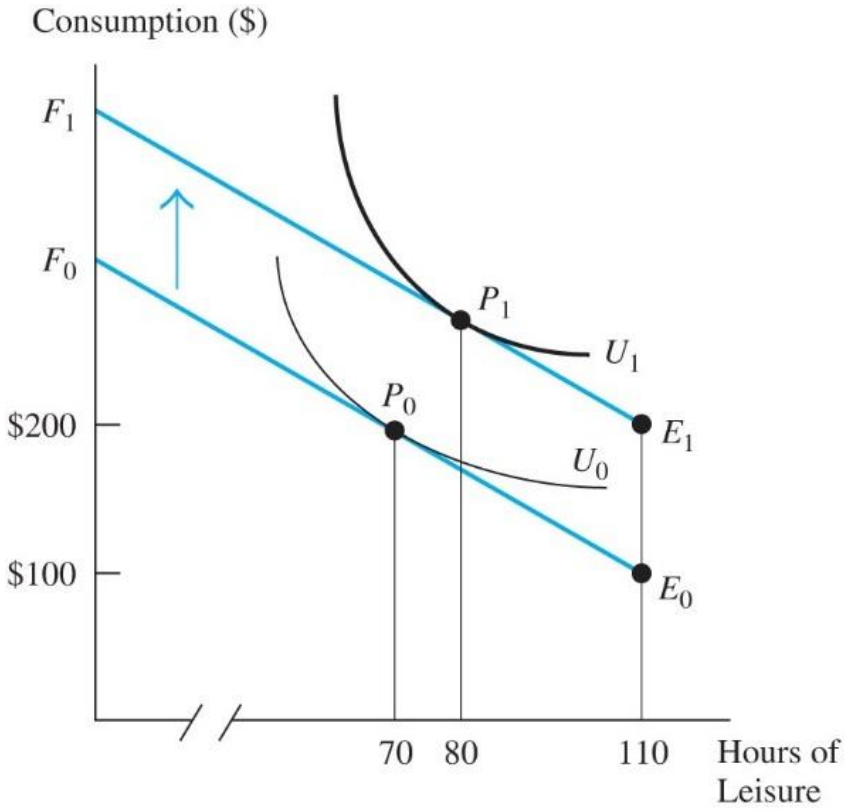
Optimal consumption is given by the point where the budget line is tangent to the indifference curve.

- 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.

Optimal Consumption and Leisure

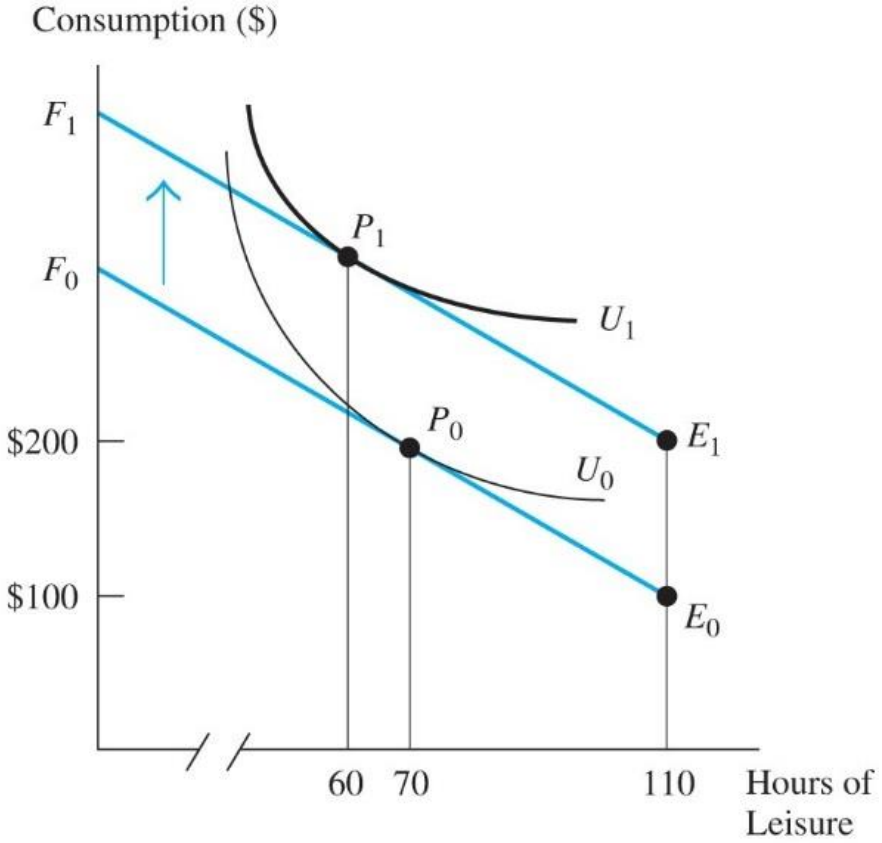


The Effect of a Change in Nonlabor Income on Hours of Work



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. If leisure is a normal good, hours of work fall.

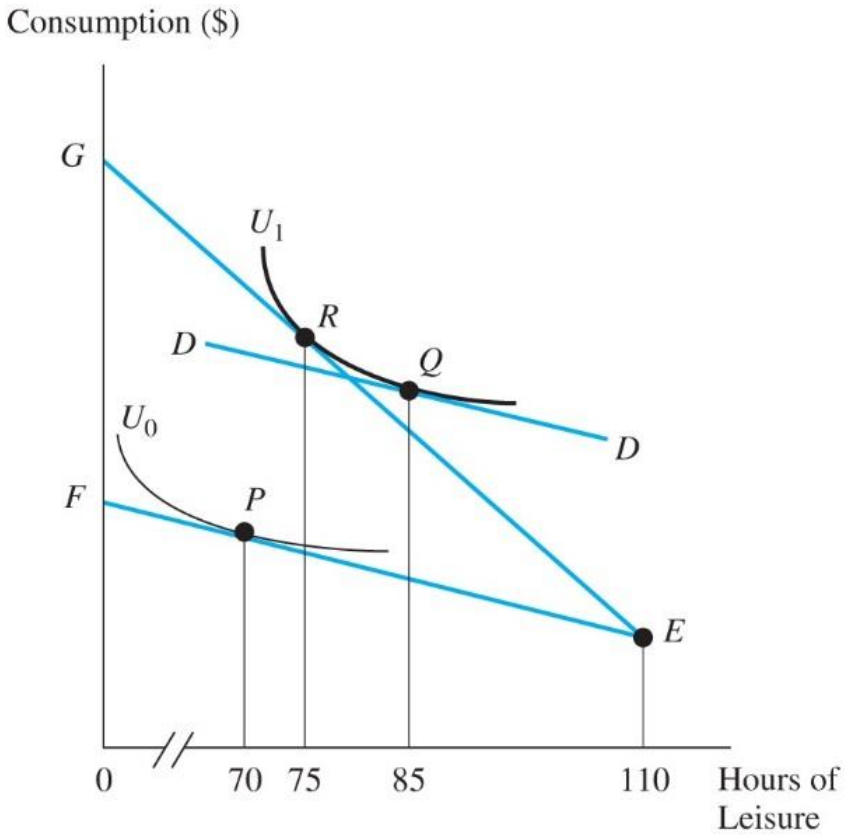
The Effect of a Change in Nonlabor Income on Hours of Work



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. If leisure is inferior, hours of work increase.

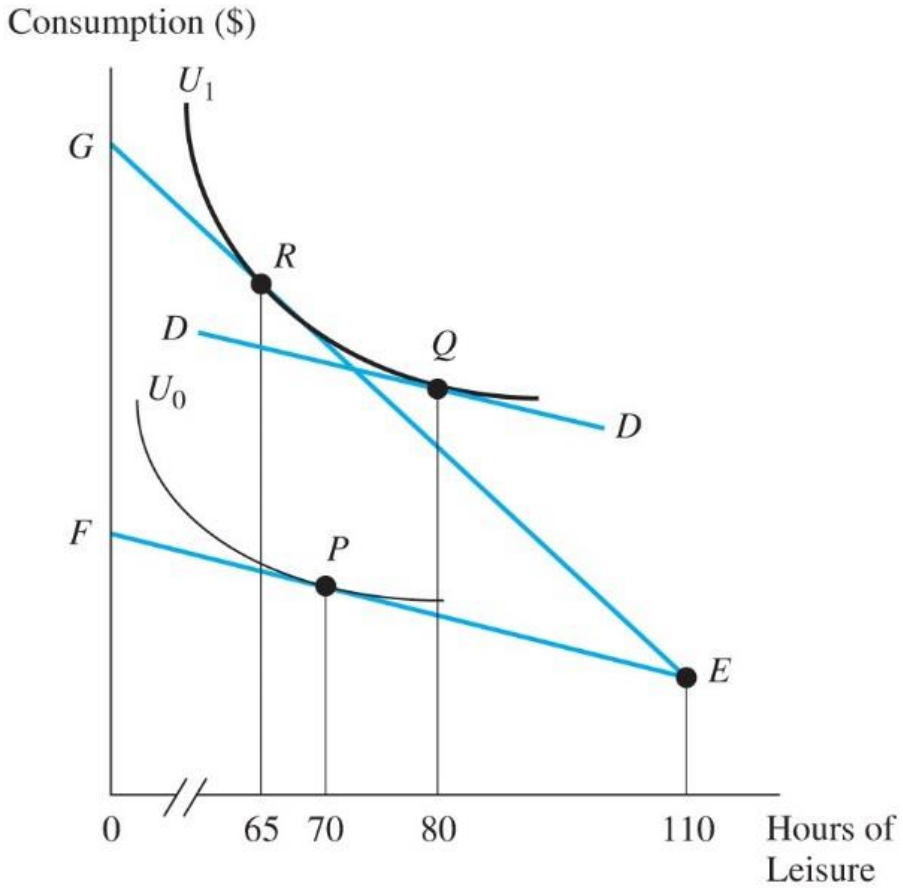
More Leisure at a Higher Wage

When the income effect dominates the substitution effect, the worker increases hours of leisure in response to an increase in the wage.



More Work at a Higher Wage

When the substitution effect dominates the income effect, the worker decreases hours of leisure in response to an increase in the wage.



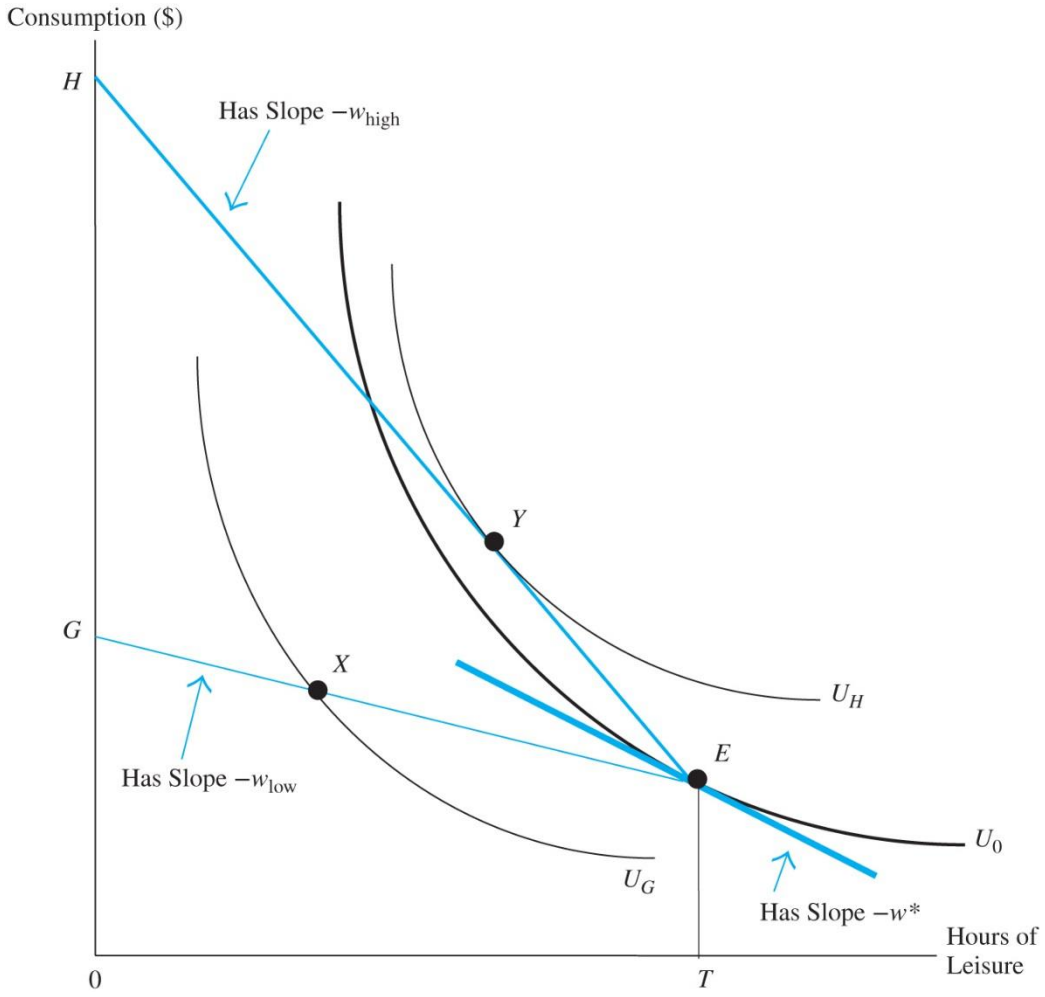
To Work or Not to Work?

Are the "terms of trade" sufficiently attractive to "bribe" a worker to enter the labor market?

Reservation wage: the lowest wage rate that would make the person indifferent between working and not working.

- Rule 1: if the market wage is less than the reservation wage, then the person will not work.
- Rule 2: the reservation wage increases as nonlabor income increases

The Reservation Wage



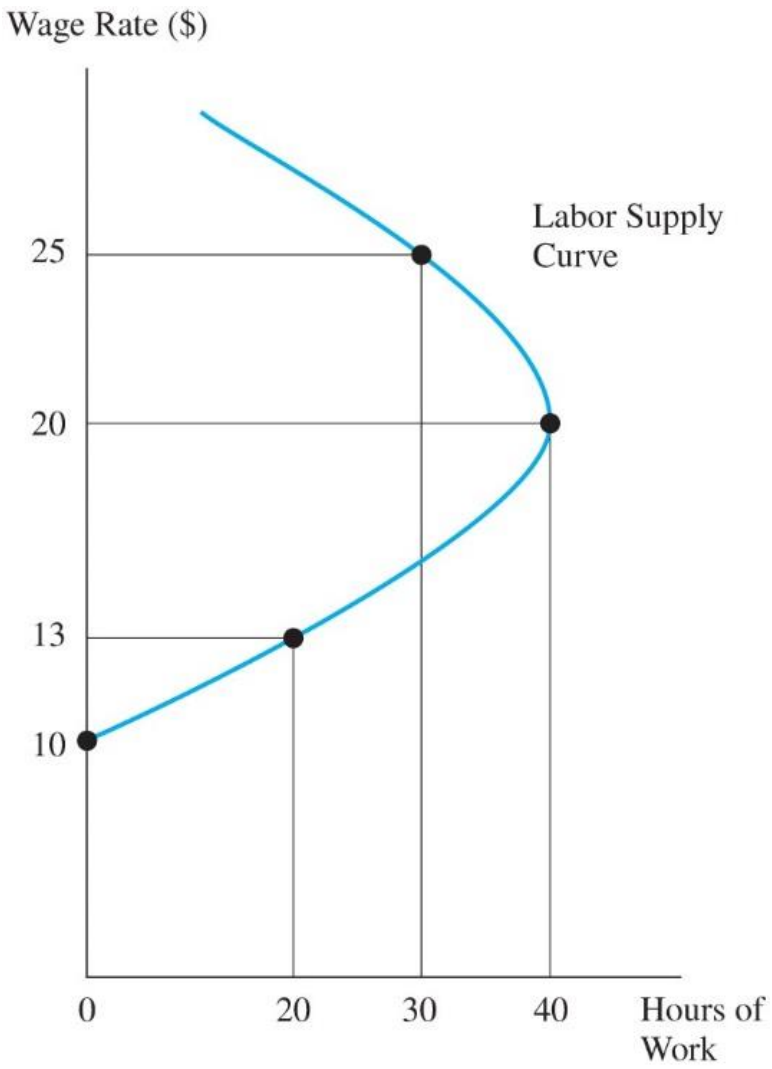
Labor Supply Curve

Relationship between hours worked and the wage rate.

- 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).

The Backward Bending Labor Supply Curve



Labor Supply Elasticity

The labor supply elasticity (σ) measures responsiveness in hours worked to changes in the wage rate.

- σ = Percent change in hours worked divided by the percent change in wage rate.
- Labor supply elasticity less than 1 is inelastic as hours of work respond proportionally less than the change in wages.
- Labor supply elasticity greater than 1 is elastic as hours of work respond proportionally more than the change in wages.

Labor Supply of Women

Substantial cross-country differences in women's labor force participation rates.

Over time, women's participation rates have increased.

In most studies on female labor supply, the substitution effect dominates the income effect for women, implying an upward sloped labor supply curve.

Policy Application: Welfare Programs and Work Incentives

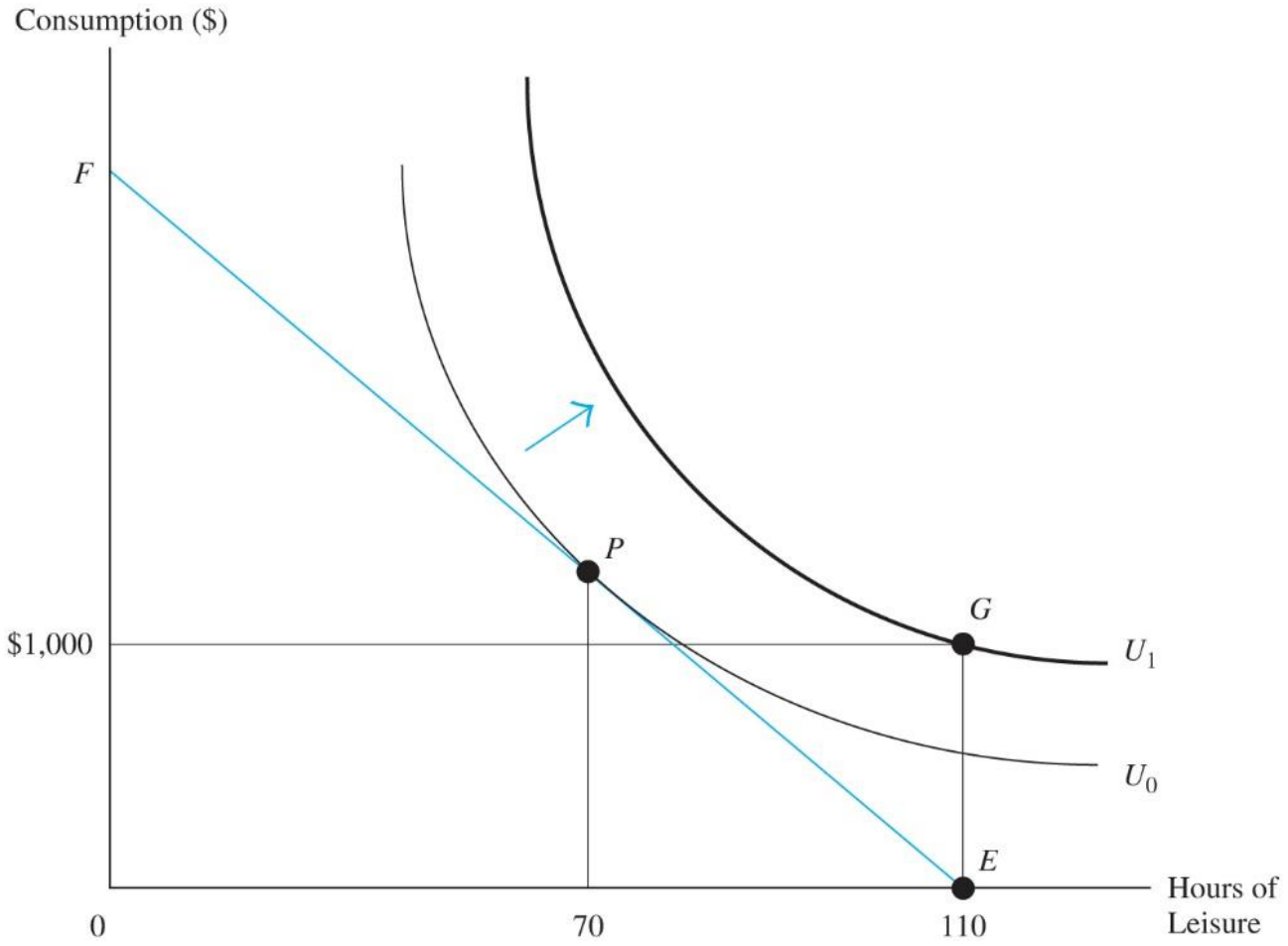
Cash grants reduce wage incentives.

Welfare programs create work disincentives.

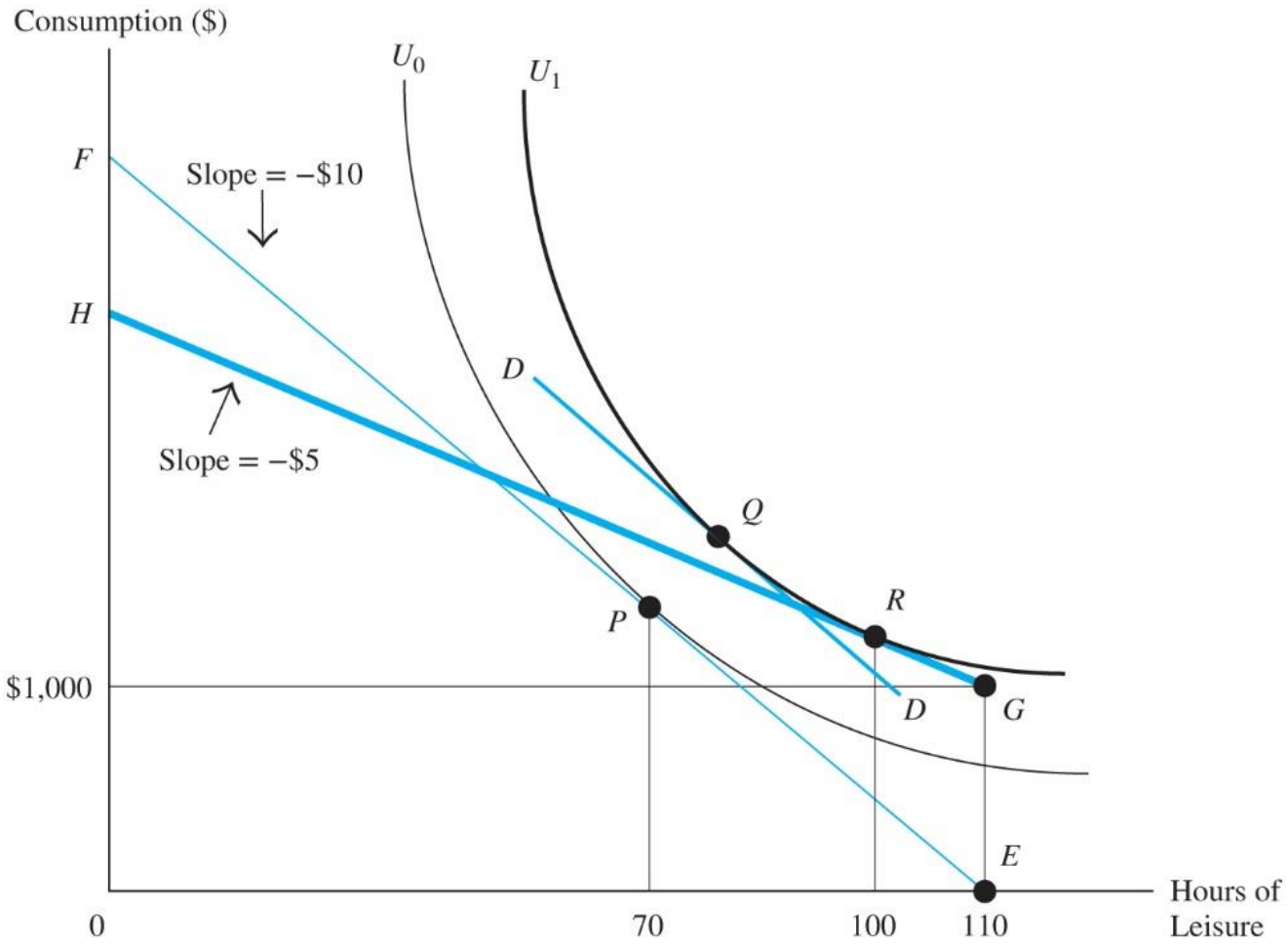
Welfare reduces supply of labor by increasing nonlabor income, which raises the reservation wage.

Effect of a Cash Grant on Work Incentives

A take-it-or-leave-it cash grant of $1,000 per week moves the worker from point *P* to point *G*, and encourages the worker to leave the labor force.



Effect of a Welfare Program on Hours of Work



Policy Application: The Earned-Income Tax Credit

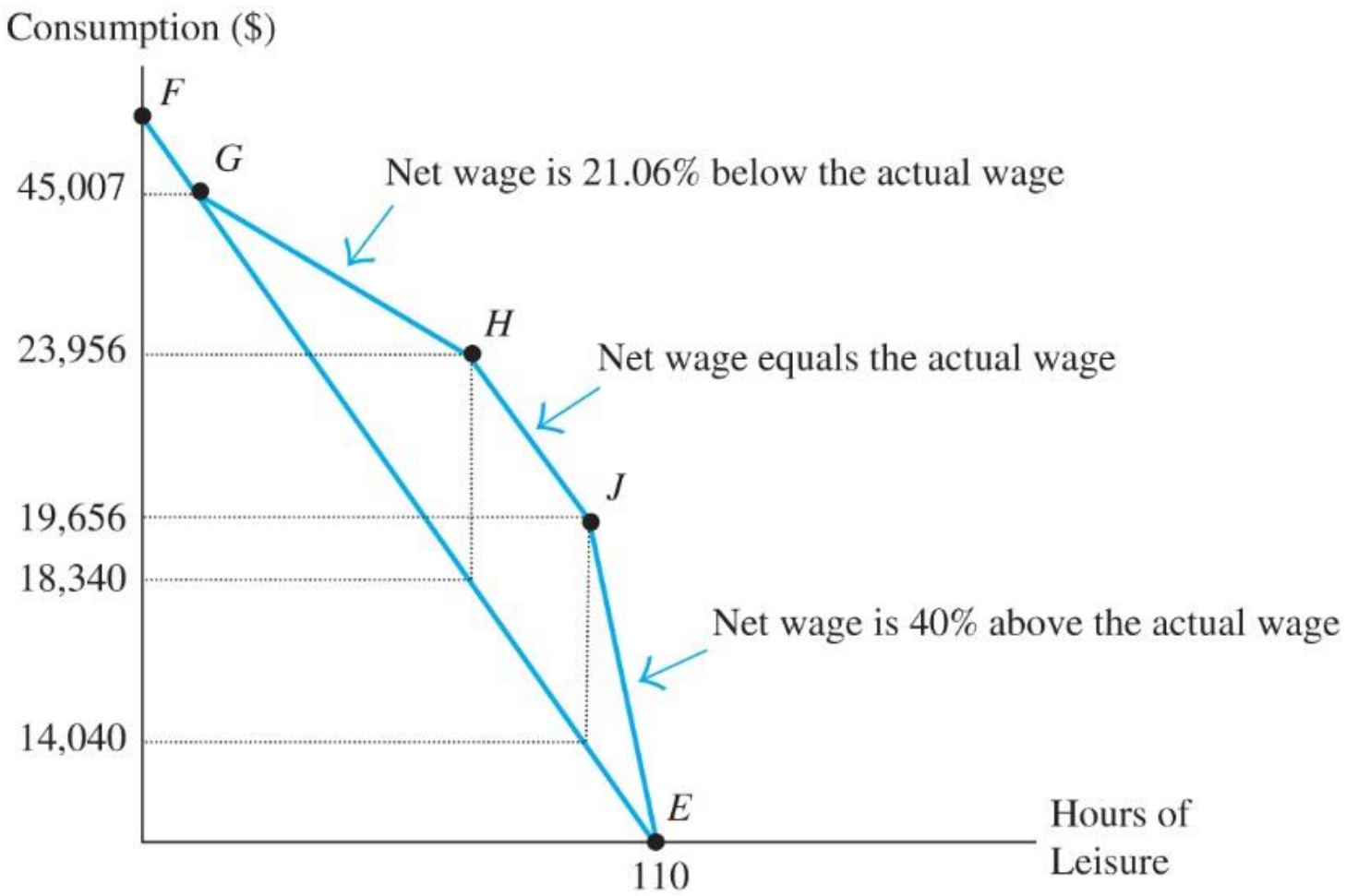
The EITC should increase labor force participation of nonworkers of targeted groups.

- The EITC encourages some non-workers to start working and never encourages a worker to quit working.

The EITC produces an income effect.

- Hours worked should change.

The EITC and the Budget Line



Labor Supply over the Life Cycle

Wage rates change over the worker's life (over the life cycle).

- Wages are low when young.
- Wages rise with time and peak around age 50.
- Wages decline or remain stable after age 50.

The changes in wages over the life cycle are "evolutionary" wage changes that alter the price of leisure.

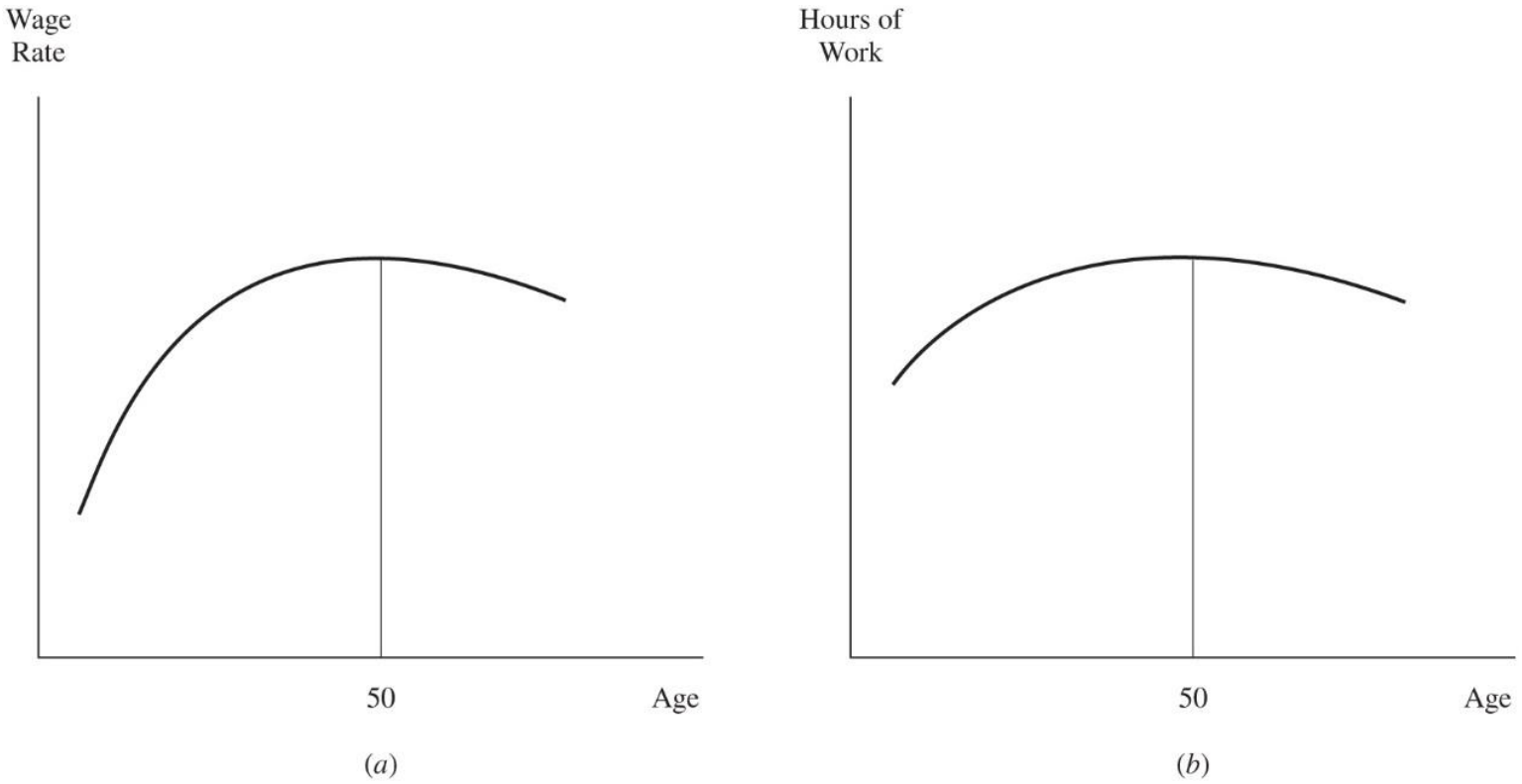
Theoretical Issues of Evolutionary Wages

A person will work more hours when wages are higher (i.e., the substitution effect tends to dominate the income effect).

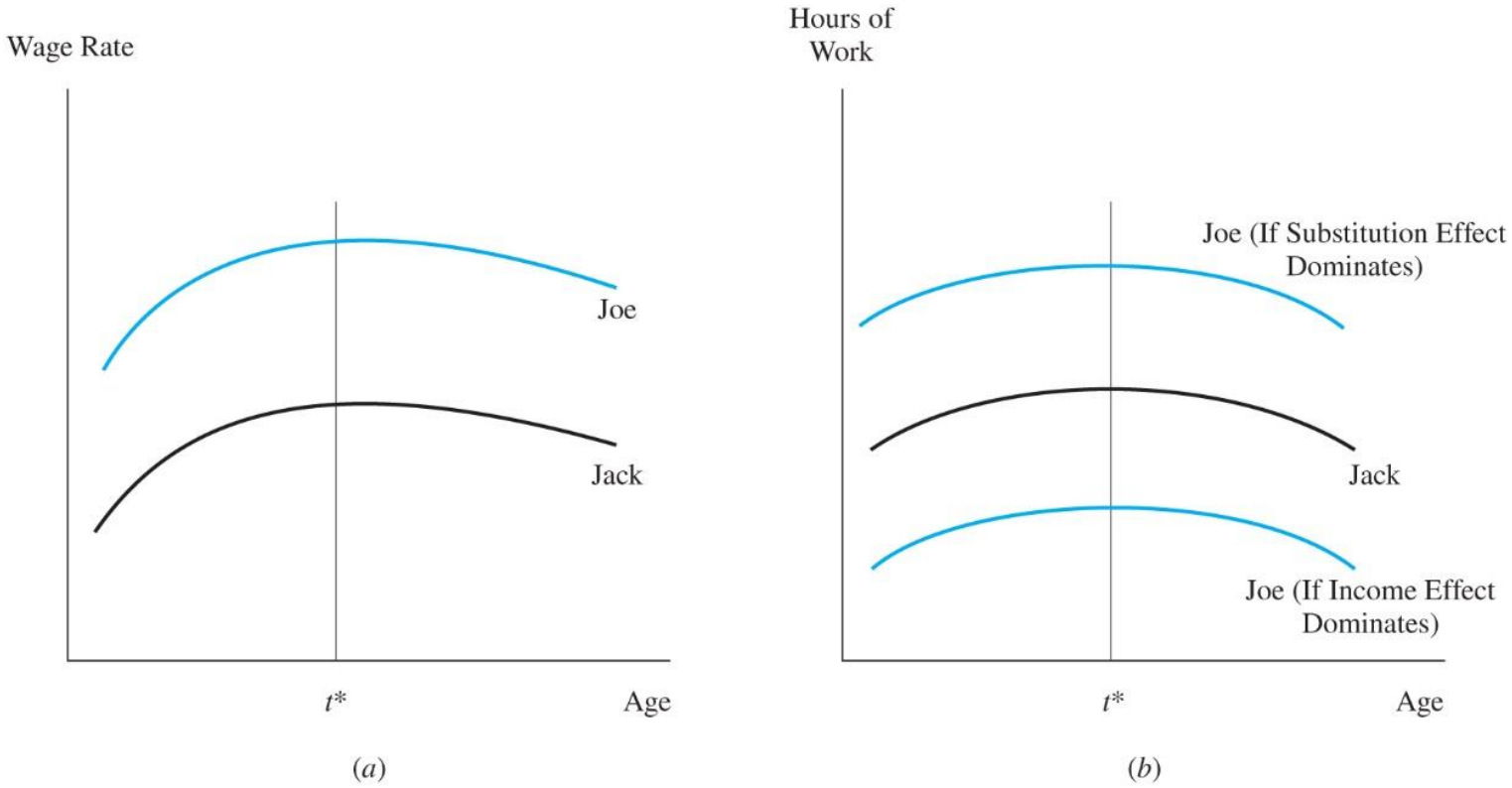
The profile of hours of work over the life cycle will have the same shape as the age-earnings profile.

Intertemporal substitution hypothesis: people substitute their time over the life cycle to take advantages of changes in the price of leisure.

The Life Cycle Path of Wages and Hours for a Typical Worker

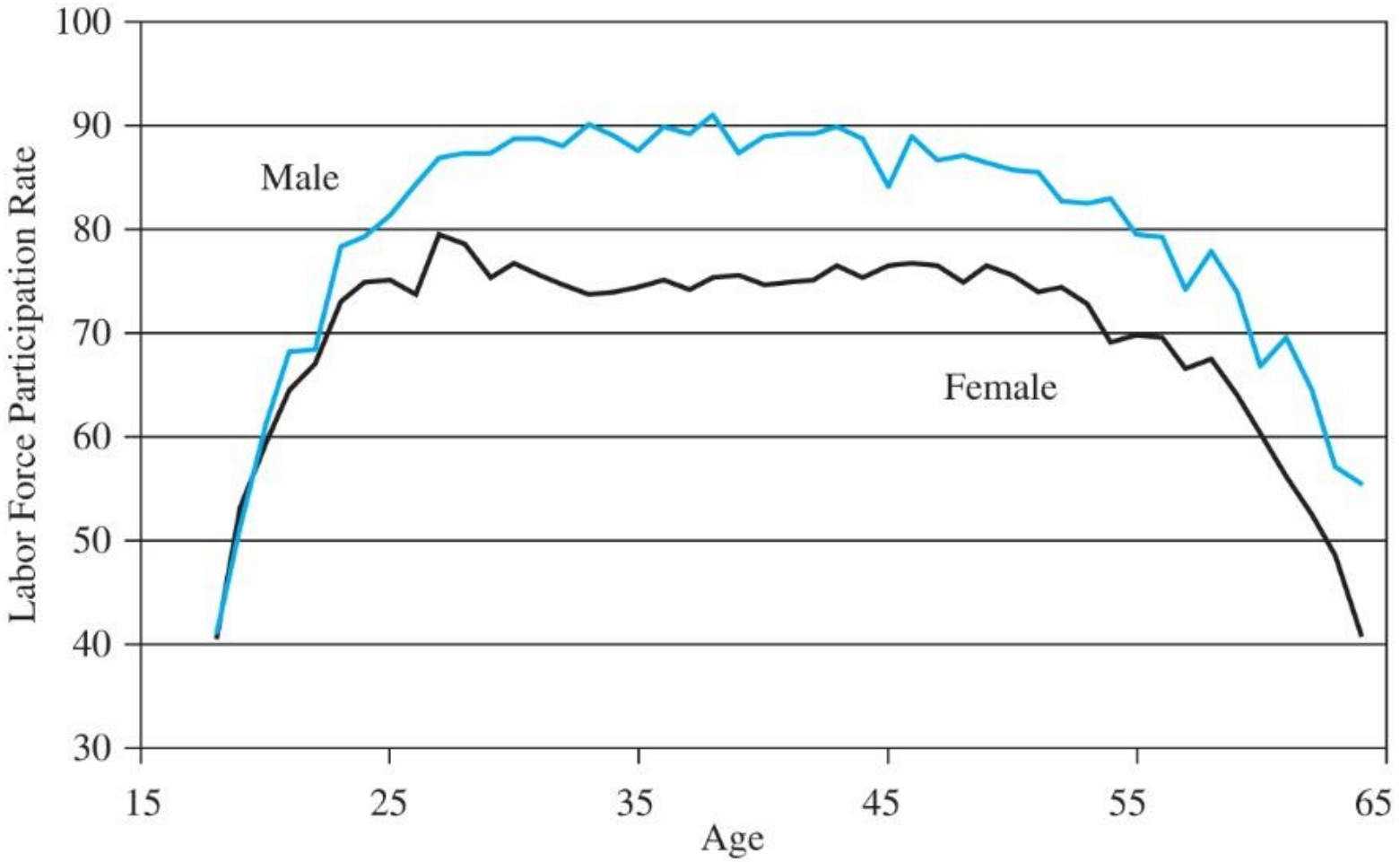


Hours of Work over the Life Cycle for Two Workers with Different Wage Paths

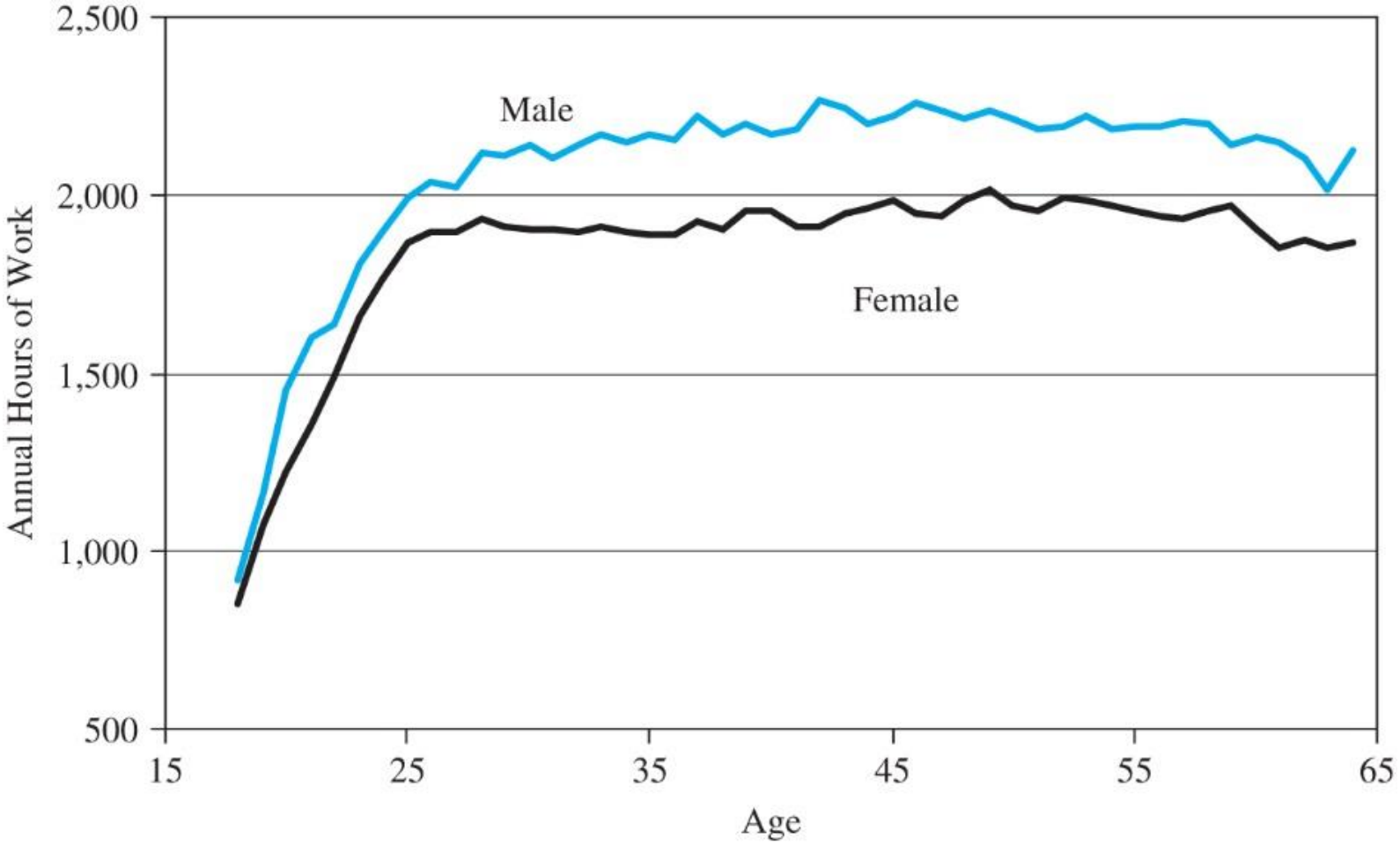


Joe's wage exceeds Jack's at every age. Although both Joe and Jack work more hours when the wage is high, Joe works more hours than Jack if the substitution effect dominates. If the income effect dominates, Joe works fewer hours than Jack.

Labor Force Participation Rates over the Life Cycle in 2013



Hours of Work over the Life Cycle in 2013



Labor Supply Over the Business Cycle

Added-worker effect.

- So-called "secondary" workers currently out of the labor market are affected by a recession because the main breadwinner becomes unemployed or faces a wage cut.
- A secondary worker may choose to enter the labor force during these bad times
- The labor force participation rate of secondary workers (i.e., the added worker effect) is counter-cyclical.

Labor Supply Over the Business Cycle

Discouraged worker effect.

- Unemployed workers find it very difficult to find jobs during a recession, so they give up searching.
- Discouraged workers exit the labor force during bad times.
- The labor force participation rate of discouraged workers is pro-cyclical.

Labor Supply Over the Business Cycle

The discouraged worker effect dominates the added-worker effect, especially during recessions.

The Labor Force Participation Rate is pro-cyclical

Retirement

Lifetime income is higher the longer a worker puts off retirement.

If pension benefits are constant, wage increases have a substitution and income effect, so lifetime income might not be altered.

An increase in pension benefits reduces the price of retirement, increasing the demand for leisure and encouraging the worker to retire earlier.

The Impact of the Social Security Earnings Test on Hours of Work

The Social Security earnings test (which taxed retirees when they earned more than $17,000 per year) generated the budget "line" that affects behavior in varying ways.

The repeal of the earnings test moved retirees to another budget line, as a result:

- One retiree would not change his hours of work.
- A second retiree would reduce his hours.
- A third retiree might increase or decrease his hours, depending on whether substitution or income effects dominate.

The Impact of the Social Security Earnings Test on Hours of Work

Conclusions:

- (1) Overall, the theory suggests that elimination of the Social Security earnings test is unlikely to substantially increase labor supply among retirees.
- (2) The empirical evidence confirms the theoretical explanations: the labor supply effects of the repeal tended to be small.