Principles of Economics
Twelfth Edition

GLOBAL
EDITION

PART II
THE MARKET SYSTEM
Choices Made by Households and Firms

Principles of Economics

TWELFTH EDITION

Karl E. Case • Ray C. Fair • Sharon E. Oster

- Assumptions for Chapters 6 through 12:

  - **perfect knowledge** The assumption that households possess a knowledge of the qualities and prices of everything available in the market and that firms have all available information concerning wage rates, capital costs, technology, and output prices.

  - **perfect competition** An industry structure in which there are many firms, each being small relative to the industry and producing virtually identical products, and in which no firm is large enough to have any control over prices.

- Products in a perfectly competitive industry are homogeneous.

- **homogeneous products** Undifferentiated outputs; products that are identical to or indistinguishable from one another.

FIGURE II.1 Firm and Household Decisions

Households demand in output markets and supply labor and capital in input markets.

To simplify our analysis, we have not included the government and international sectors in this circular flow diagram. These topics will be discussed in detail later.
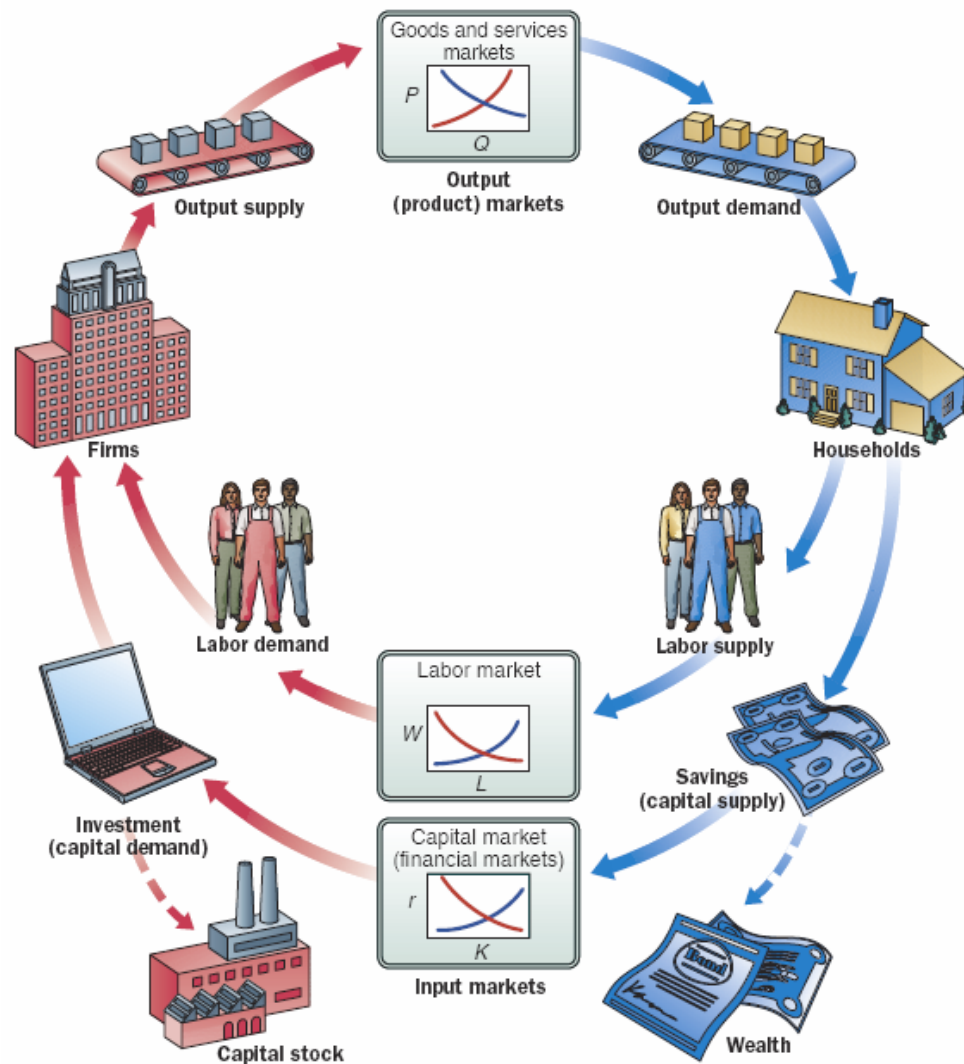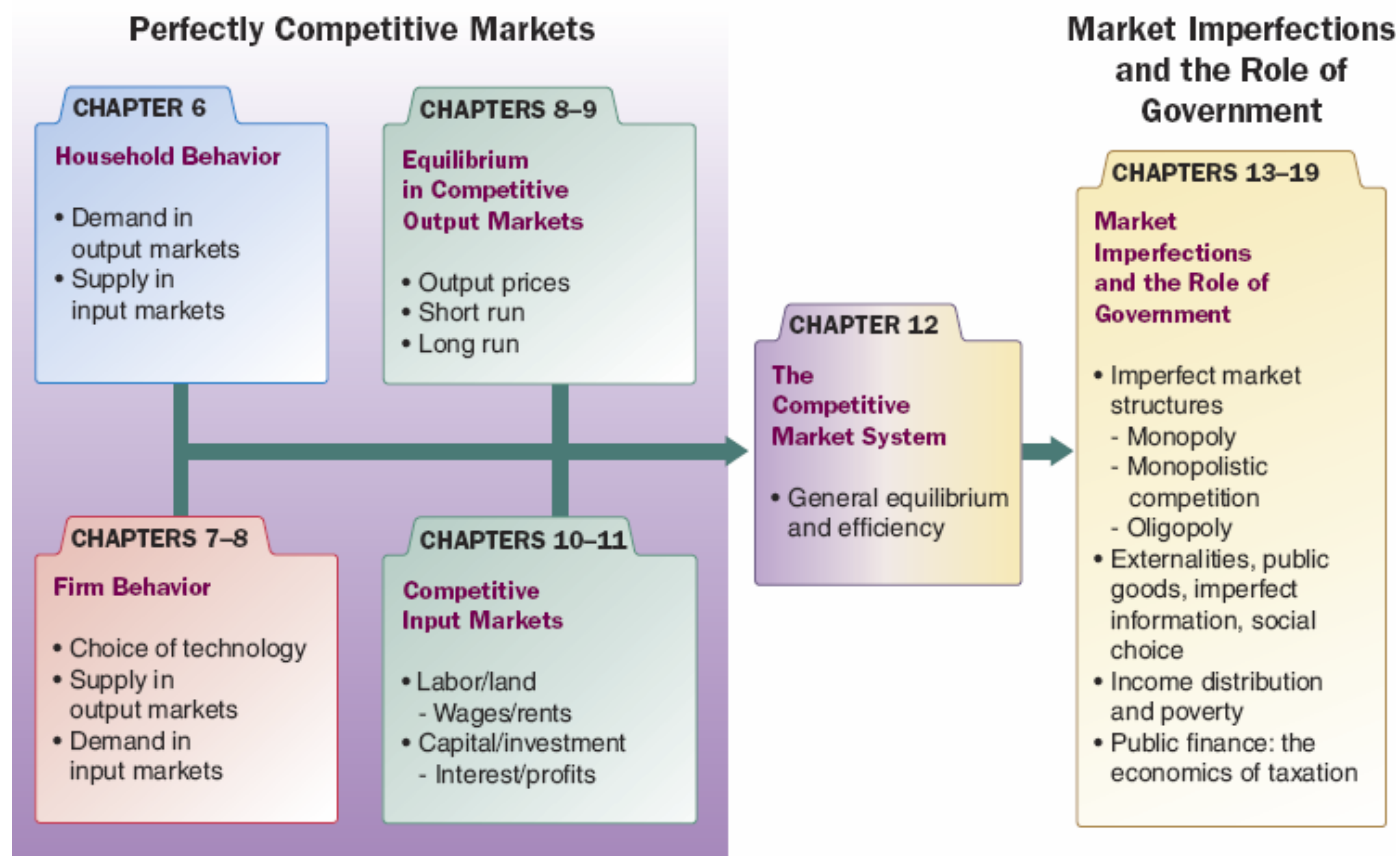
FIGURE II.2 Understanding the Microeconomy and the Role of Government

Perfectly Competitive Markets

CHAPTER 6

Household Behavior

- Demand in output markets
- Supply in input markets

CHAPTERS 8–9

Equilibrium in Competitive Output Markets

- Output prices
- Short run
- Long run

CHAPTERS 7–8

Firm Behavior

- Choice of technology
- Supply in output markets
- Demand in input markets

CHAPTERS 10–11

Competitive Input Markets

- Labor/land
  - Wages/rents
- Capital/investment
  - Interest/profits

CHAPTER 12

The Competitive Market System

- General equilibrium and efficiency

Market Imperfections and the Role of Government

CHAPTERS 13–19

Market Imperfections and the Role of Government

- Imperfect market structures
  - Monopoly
  - Monopolistic competition
  - Oligopoly
- Externalities, public goods, imperfect information, social choice
- Income distribution and poverty
- Public finance: the economics of taxation

To understand how the economy works, it helps to build from the ground up. We start in Chapters 6–8 with an overview of household and firm decision making in simple, perfectly competitive markets. In Chapters 9–11, we see how firms and households interact in output markets (product markets) and input markets (labor/land and capital) to determine prices, wages, and profits. Once we have a picture of how a simple, perfectly competitive economy works, we begin to relax assumptions. Chapter 12 is a pivotal chapter that links perfectly competitive markets with a discussion of market imperfections and the role of government. In Chapters 13–19, we cover the three noncompetitive market structures (monopoly, monopolistic competition, and oligopoly), externalities, public goods, uncertainty and asymmetric information, and income distribution, as well as taxation and government finance.

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Chapter 6
Household Behavior and Consumer Choice

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Chapter Outline and Learning Objectives
(1 of 2)

6.1 Household Choice in Output Markets

- Explain where the budget constraint comes from and the role it plays in household demand.

6.2 The Basis of Choice: Utility

- Understand how the utility-maximizing rule works in household choice of products.

6.3 Income and Substitution Effects

- Describe the income and substitution effects of a decrease in the price of food.

6.4 Household Choice in Input Markets

- Discuss factors that affect the labor and saving decisions of households.

A Review: Households in Output and Input Markets

Appendix: Indifference Curves

- Understand how to derive a demand curve from indifference curves and budget constraints.

Chapter 6 Household Behavior and Consumer Choice

- Every day people make different decisions.

- In this chapter, we will develop a set of principles that can be used to understand decisions in the product market and the labor market.

- A theme in this analysis is the idea of constrained choice.

Household Choice in Output Markets

- Every household must make three basic decisions:

  1. How much of each product, or output, to demand

  2. How much labor to supply

  3. How much to spend today and how much to save for the future

The Determinants of Household Demand

- Several factors influence the quantity of a given good or service demanded by a single household:
  - The price of the product
  - The income available to the household
  - The household's accumulated wealth
  - The prices of other products available to the household
  - The household's tastes and preferences
  - The household's expectations about future income, wealth, and prices

- **budget constraint** The limits imposed on household choices by income, wealth, and product prices.

- **choice set** or **opportunity set** The set of options that is defined and limited by a budget constraint.

TABLE 6.1   Possible Budget Choices of a Person Earning $1,000 per Month after Taxes

Option	Monthly Rent	Food	Other Expenses	Total	Available?
A	$ 400	$250	$350	$1,000	Yes
B	600	200	200	1,000	Yes
C	700	150	150	1,000	Yes
D	1,000	100	100	1,200	No

Preferences, Tastes, Trade-offs, and Opportunity Cost

- Within the constraints imposed by limited incomes and fixed prices, households are free to choose what they will and will not buy.

- A household makes a choice by weighing the good or service that it chooses against all the other things that the same money could buy.

- With a limited budget, the real cost of any good or service is the value of the other goods and services that could have been purchased with the same amount of money.

FIGURE 6.1 Budget Constraint and Opportunity Set for Ann and Tom

A budget constraint separates those combinations of goods and services (e.g., point C) that are available, given limited income, from those that are not (e.g., point E).

The available combinations make up the opportunity set.
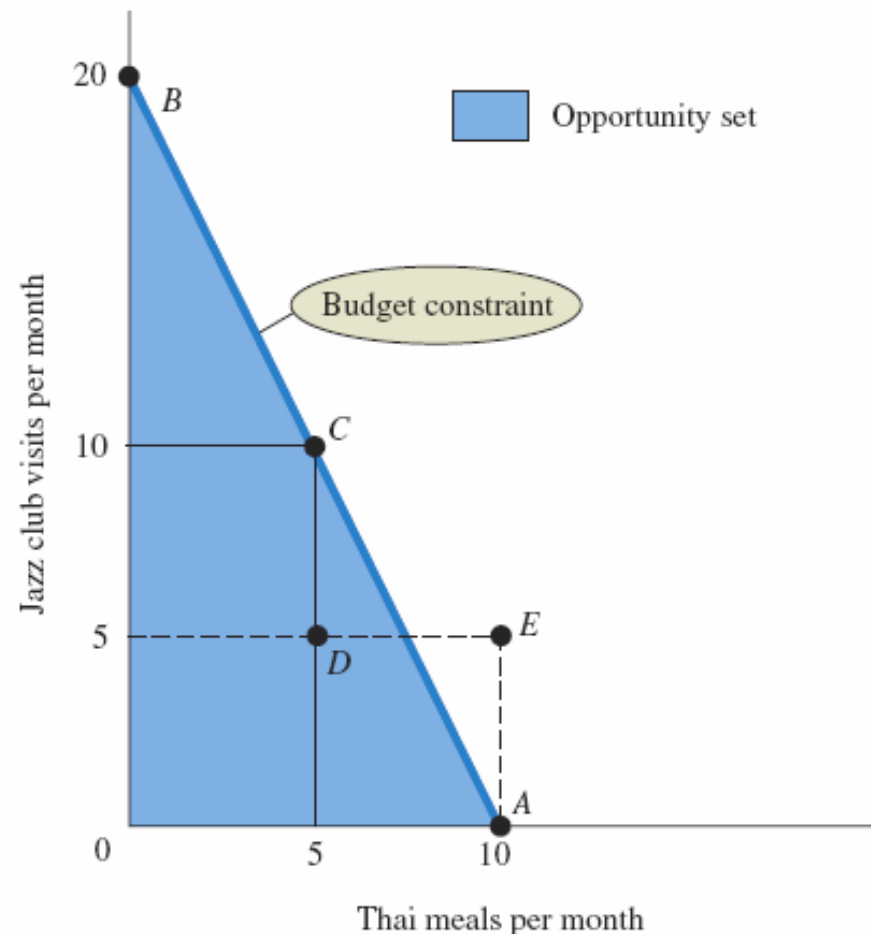
The Budget Constraint More Formally

- Both prices and income affect the size of a household's opportunity set.

- **real income** The set of opportunities to purchase real goods and services available to a household as determined by prices and money income.

The Equation of the Budget Constraint

- In general, the budget constraint can be written:

$$P_X X + P_Y Y = I,$$

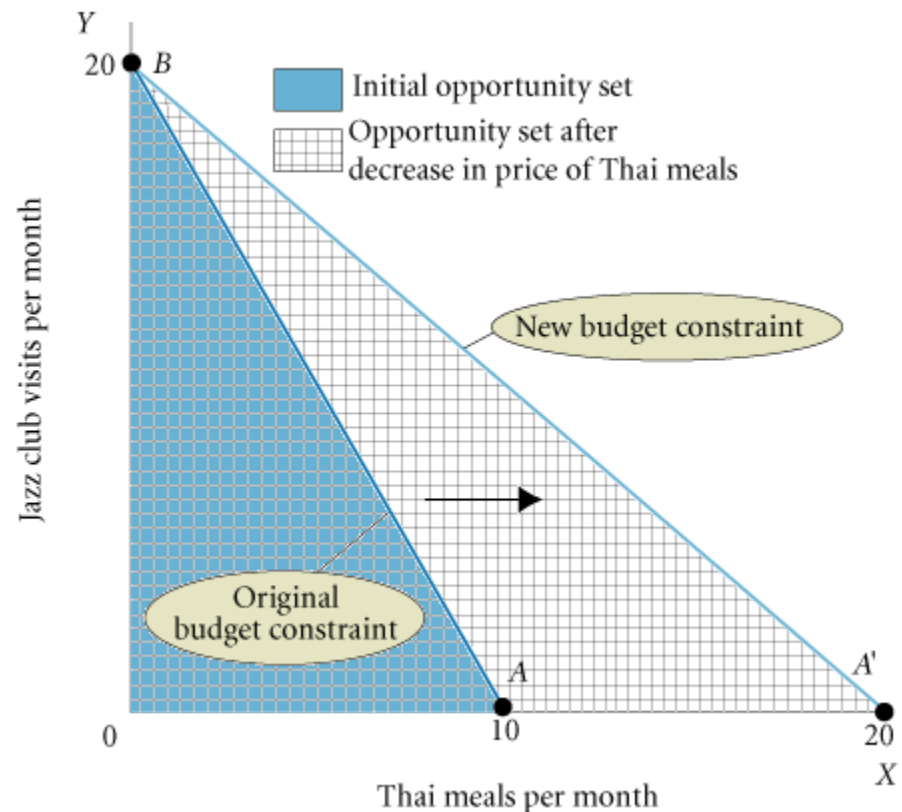where:

P_X = the price of X
X = the quantity of X consumed
P_Y = the price of Y
Y = the quantity of Y consumed
I = household income

FIGURE 6.2 The Effect of a Decrease in Price on Ann and Tom's Budget Constraint

When the price of a good decreases, the budget constraint swivels to the right, increasing the opportunities available and expanding choice.

- **utility** The satisfaction a product yields

Diminishing Marginal Utility

- **law of diminishing marginal utility** The more of any one good consumed in a given period, the less satisfaction (utility) generated by consuming each additional (marginal) unit of the same good.

- **marginal utility (*MU*)** The additional satisfaction gained by the consumption of *one more* unit of a good or service.

- **total utility** The total satisfaction a product yields.

TABLE 6.2 Total Utility and Marginal Utility of Trips to the Club per Week

Trips to Club	Total Utility	Marginal Utility
1	12	12
2	22	10
3	28	6
4	32	4
5	34	2
6	34	0

FIGURE 6.3 Graphs of Frank's Total and Marginal Utility

Marginal utility is the additional utility gained by consuming one additional unit of a commodity—in this case, trips to the club.
When marginal utility is zero, total utility stops rising.
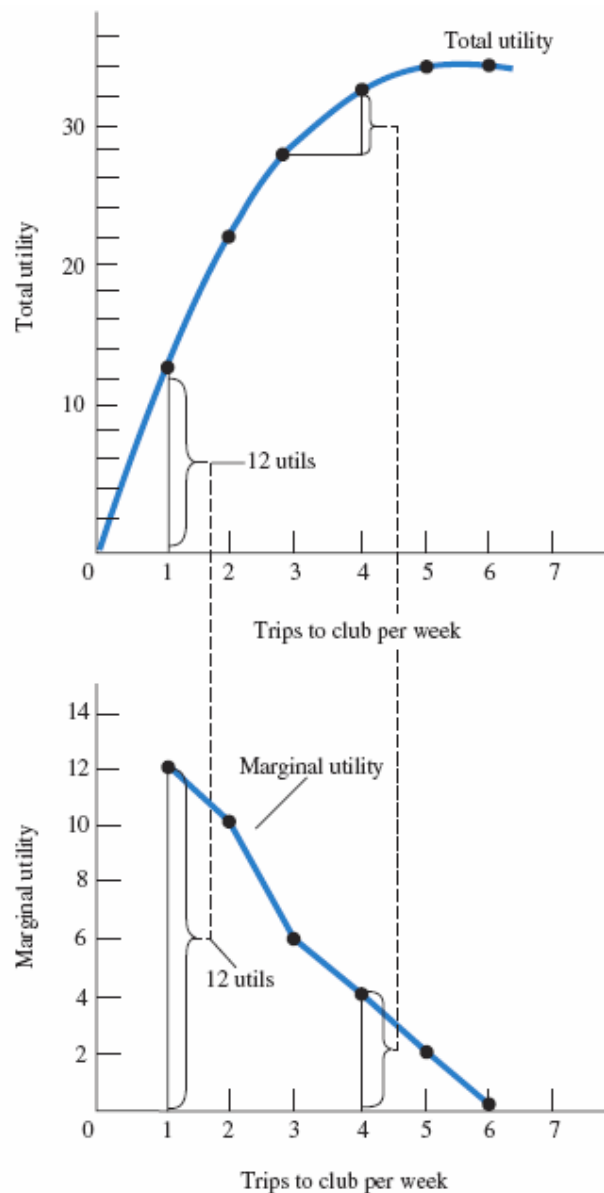
Allocating Income to Maximize Utility

TABLE 6.3   Allocation of Fixed Expenditure per Week between Two Alternatives

(1) Trips to Club per Week	(2) Total Utility	(3) Marginal Utility (*MU*)	(4) Price (*P*)	(5) Marginal Utility per Dollar (*MU/P*)
1	12	12	$3.00	4.0
2	22	10	3.00	3.3
3	28	6	3.00	2.0
4	32	4	3.00	1.3
5	34	2	3.00	0.7
6	34	0	3.00	0

(1) Basketball Games per Week	(2) Total Utility	(3) Marginal Utility (*MU*)	(4) Price (*P*)	(5) Marginal Utility per Dollar (*MU/P*)
1	21	21	$6.00	3.5
2	33	12	6.00	2.0
3	42	9	6.00	1.5
4	48	6	6.00	1.0
5	51	3	6.00	0.5
6	51	0	6.00	0

- Utility-maximizing consumers spread out their expenditures until the following condition holds:

$$\text{Utility} - \text{Maximizing rule} : \frac{MU_X}{P_X} = \frac{MU_Y}{P_Y} \text{ for all goods,}$$

  where MU_X is the marginal utility derived from the last unit of X consumed, MU_Y is the marginal utility derived from the last unit of Y consumed, P_X is the price per unit of X, and P_Y is the price per unit of Y.

- **utility-maximizing rule** Equating the ratio of the marginal utility of a good to its price for all goods.

- **diamond/water paradox** A paradox stating that (1) the things with the greatest value in use frequently have little or no value in exchange and (2) the things with the greatest value in exchange frequently have little or no value in use.

ECONOMICS IN PRACTICE

Soda Beverage Choice

Many countries have started imposing a tax on soda beverages as a measure to raise revenue as well as to prevent obesity.

Research found that due to the tax sales shifted to other cheaper, high-caloric or generic versions of soda beverages.
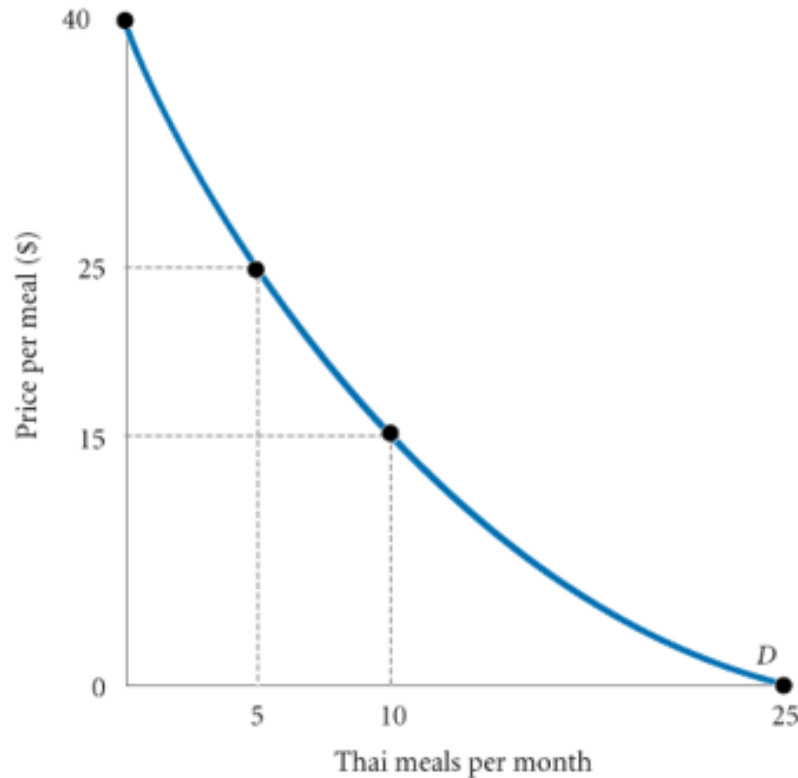
THINKING PRACTICALLY

1. Using the utility-maximizing rule, illustrate how consumers who are affected by the soda tax policy make choices to achieve an optimal decision.

Diminishing Marginal Utility and Downward-Sloping Demand

FIGURE 6.4 Diminishing Marginal Utility and Downward-Sloping Demand

At a price of $40, the utility gained from even the first Thai meal is not worth the price.

However, a lower price of $25 lures Ann and Tom into the Thai restaurant 5 times a month. (The utility from the sixth meal is not worth $25.)

If the price is $15, Ann and Tom will eat Thai meals 10 times a month—until the marginal utility of a Thai meal drops below the utility they could gain from spending $15 on other goods.

At 25 meals a month, they cannot tolerate the thought of another Thai meal, even if it is free.

Income and Substitution Effects

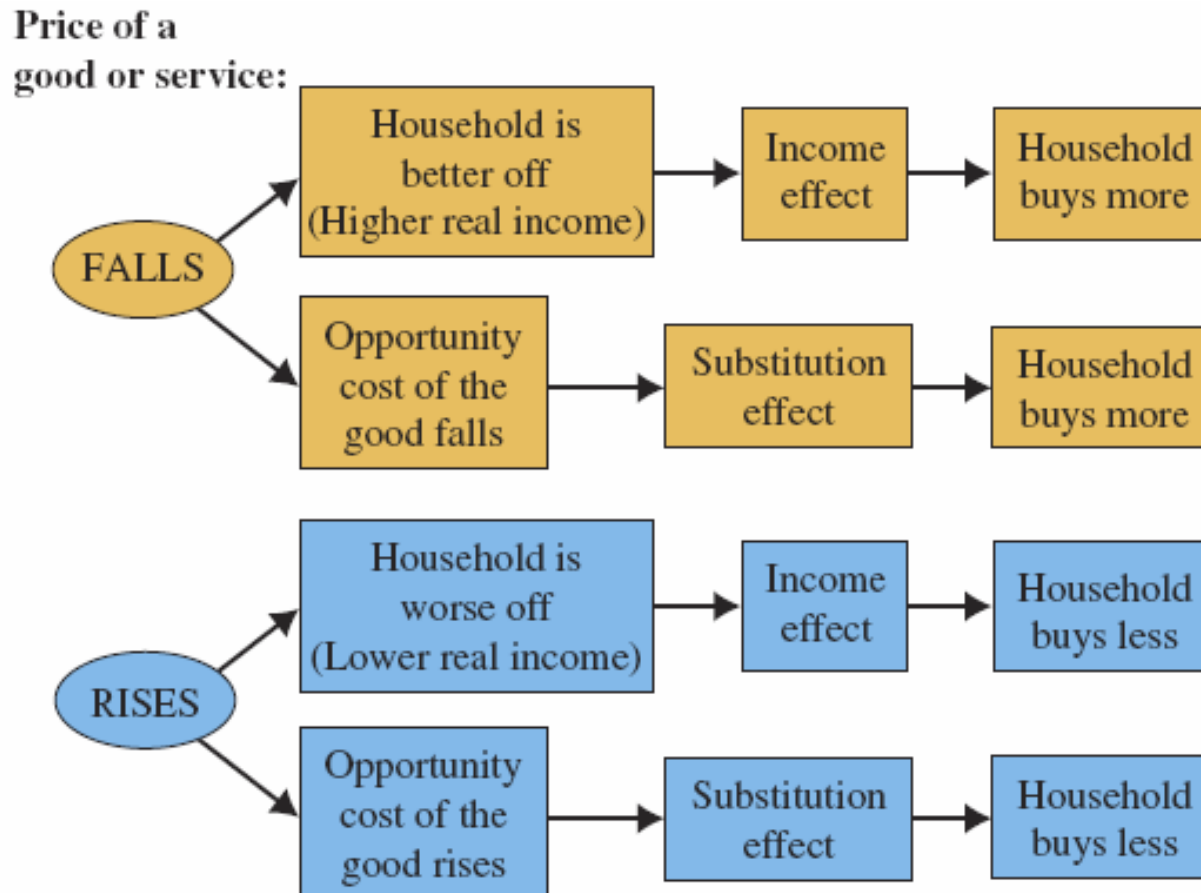- Another explanation for downward-sloping demand curves centers on income and substitution effects.

The Income Effect

- Assuming nothing else changes, a price decline in a product makes you better off because you have more income left over.

- The change in consumption of *X* due to this improvement in well-being is called the *income effect of a price change*.

The Substitution Effect

- When the price of a product falls, that product also becomes *relatively* cheaper.

- A fall in the price of product *X* might cause a household to shift its purchasing pattern away from substitutes toward *X*.

- This shift is called the *substitution effect of a price change*.

FIGURE 6.5 Income and Substitution Effects of a Price Change

Price of a good or service:

FALLS
- Household is better off (Higher real income) → Income effect → Household buys more
- Opportunity cost of the good falls → Substitution effect → Household buys more

RISES
- Household is worse off (Lower real income) → Income effect → Household buys less
- Opportunity cost of the good rises → Substitution effect → Household buys less

For normal goods, the income and substitution effects work in the same direction. Higher prices lead to a lower quantity demanded, and lower prices lead to a higher quantity demanded.

ECONOMICS IN PRACTICE
Substitution and Market Baskets

When Mr. Smith shops, he compares the marginal utility of each product he consumes relative to its price in deciding what bundle to buy.

When we artificially restrict Mr. Smith's ability to substitute goods, we almost inevitably give him a more expensive bundle.

THINKING PRACTICALLY

1. An employer decides to transfer one of her executives to Europe. "Don't worry," she says, "I will increase your salary so that you can afford exactly the same things in your new home city as you can buy here." Is this the right salary adjustment?

Household Choice in Input Markets

The Labor Supply Decision

- As in output markets, households face constrained choices in input markets. They must decide:

  1. Whether to work

  2. How much to work

  3. What kind of a job to take

The Labor Supply Decision

- Household members must decide how much labor to supply.

- The choices they make are affected by:
    - Availability of jobs
    - Market wage rates
    - Skills they possess
    - The limit of 168 hours in a week

FIGURE 6.6 The Trade-off Facing Households
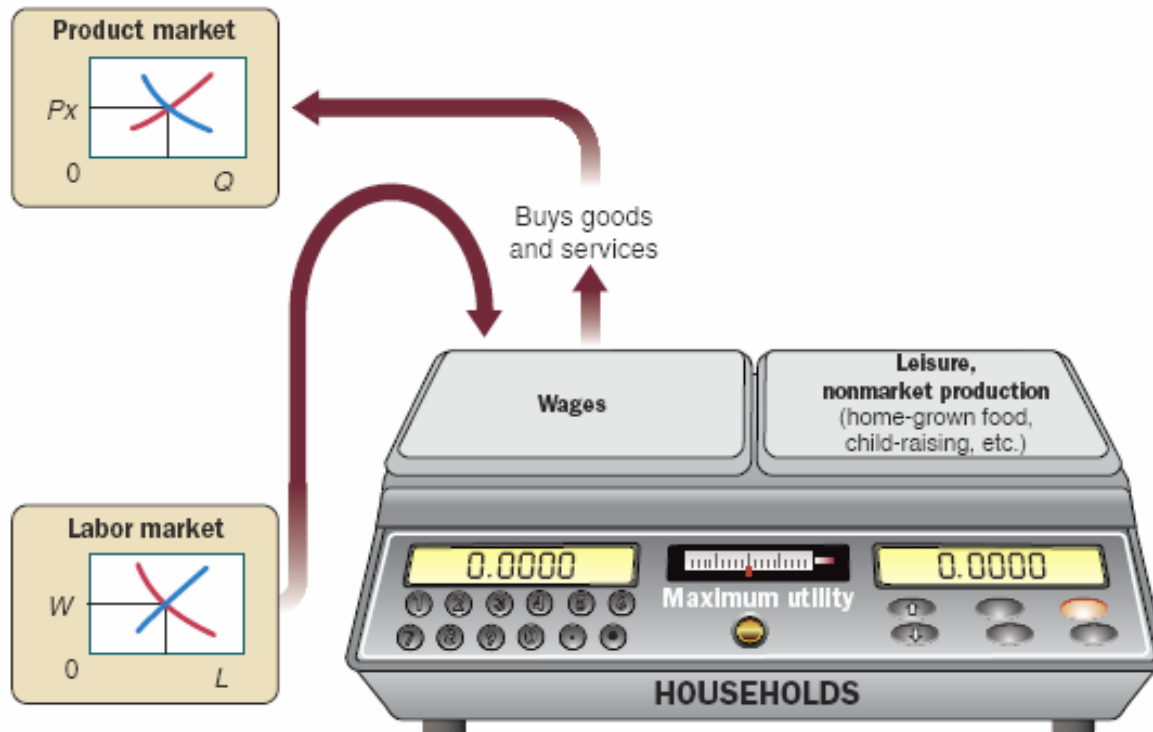
The decision to enter the workforce involves a trade-off between wages (and the goods and services that wages will buy) on the one hand and leisure and the value of nonmarket production on the other hand.

The Price of Leisure

- Trading one good for another involves buying less of one and more of another, so households simply reallocate income from one good to the other.

- "Buying" more leisure, however, means reallocating time between work and nonwork activities.

- For each hour of leisure that you decide to consume, you give up one hour's wages.

- Thus, the wage rate is the price of leisure.

Income and Substitution Effects of a Wage Change

- **labor supply curve** A curve that shows the quantity of labor supplied at different wage rates. Its shape depends on how households react to changes in the wage rate.

ECONOMICS IN PRACTICE

Uber Drivers

Uber is a company that matches people who are available to use their own cars to drive people around with those who want a ride.
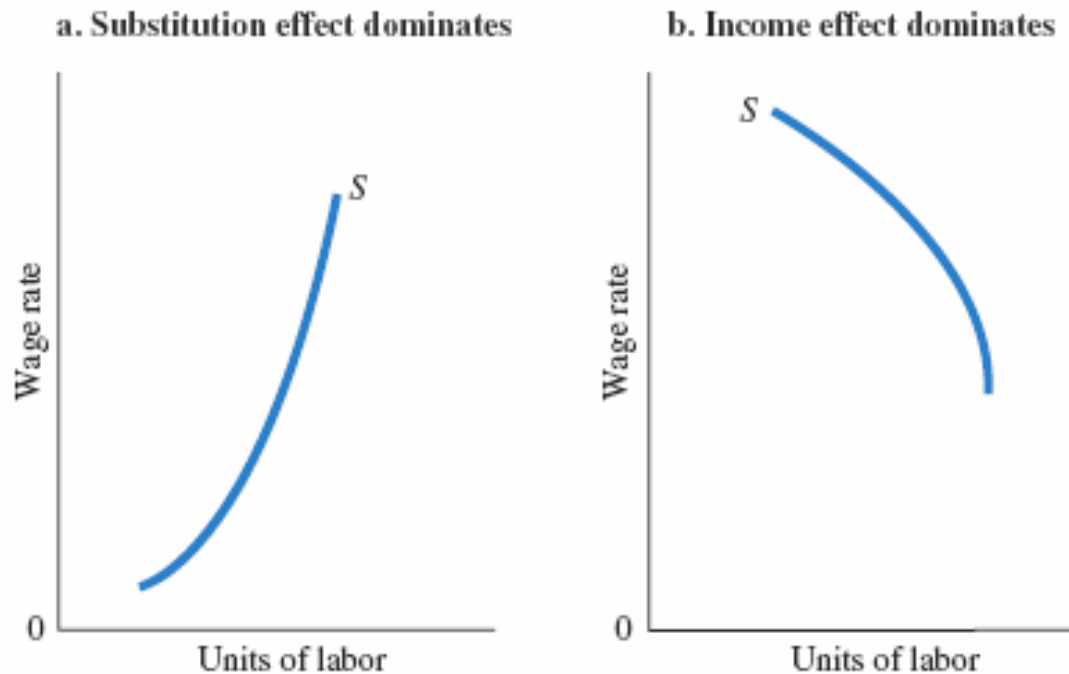
Uber drivers have a great deal of job flexibility in terms of how much they work and when to accept a passenger.

THINKING PRACTICALLY

1. Why is Uber willing to let drivers be flexible in the number of hours they work?

6-36

FIGURE 6.7 Two Labor Supply Curves

When the substitution effect outweighs the income effect, the labor supply curve slopes upward (a).

When the income effect outweighs the substitution effect, the result is a "backward bending" labor supply curve: The labor supply curve slopes downward (b).

Saving and Borrowing: Present versus Future Consumption

- Changes in interest rates affect household behavior in capital markets.

- Empirical evidence indicates that saving tends to increase as the interest rate rises (i.e., the substitution effect is larger than the income effect).

- **financial capital market** The complex set of institutions in which suppliers of capital (households that save) and the demand for capital (firms wanting to invest) interact.

A Review: Households in Output and Input Markets

- We now have a rough sketch of the factors that determine output demand and input supply.

- In the next three chapters, we turn to firm behavior and explore in detail the factors that affect output supply and input demand.

REVIEW TERMS AND CONCEPTS

- budget constraint
- choice set or opportunity set
- diamond/water paradox
- financial capital market
- homogeneous products
- labor supply curve
- law of diminishing marginal utility
- marginal utility (*MU*)
- perfect competition
- perfect knowledge
- real income
- total utility
- utility
- utility-maximizing rule

- **Assumptions:**

  1. Goods yield positive marginal utility (i.e., "more is better").

  2. The marginal rate of substitution, the ratio at which a household is willing to substitute X for Y (MU_X/MU_Y,), is diminishing.

  3. Consumers have the ability to choose among the combinations of goods and services available.

  4. Consumer choices are consistent with a simple assumption of rationality.

Assumptions

- **marginal rate of substitution** MU_X/MU_Y ; the ratio at which a household is willing to substitute good Y for good X.

Deriving Indifference Curves

- **indifference curve** A set of points, each point representing a combination of goods X and Y, all of which yield the same total utility.

Deriving Indifference Curves

FIGURE 6A.1 An Indifference Curve
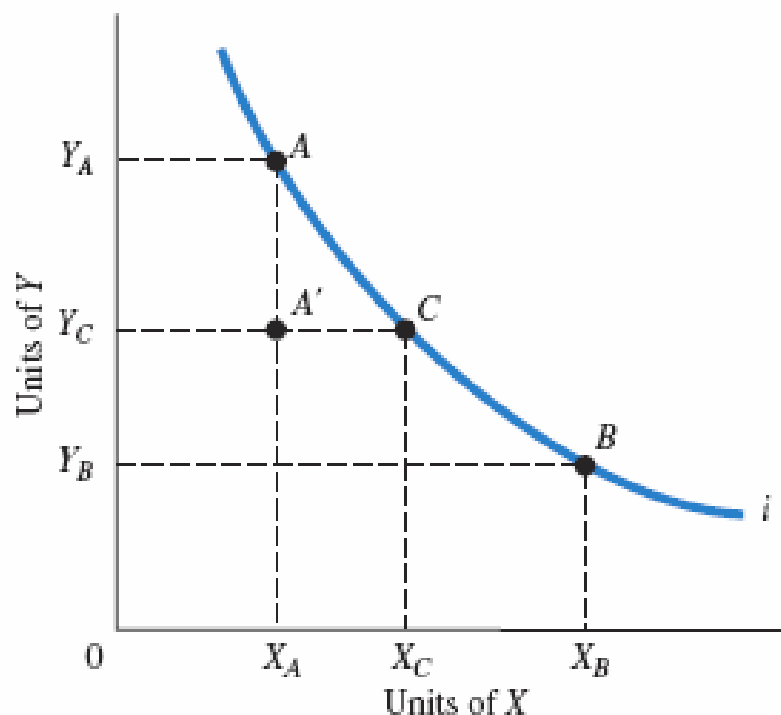
An indifference curve is a set of points, each representing a combination of some amount of good X and some amount of good Y, that all yield the same amount of total utility.

The consumer depicted here is indifferent between bundles A and B, B and C, and A and C.

Because "more is better," our consumer is unequivocally worse off at A' than at A.

FIGURE 6A.2 A Preference Map: A Family of Indifference Curves

Slope: $= \dfrac{\Delta Y_1}{\Delta X_1} = -\dfrac{MU_X}{MU_Y}$
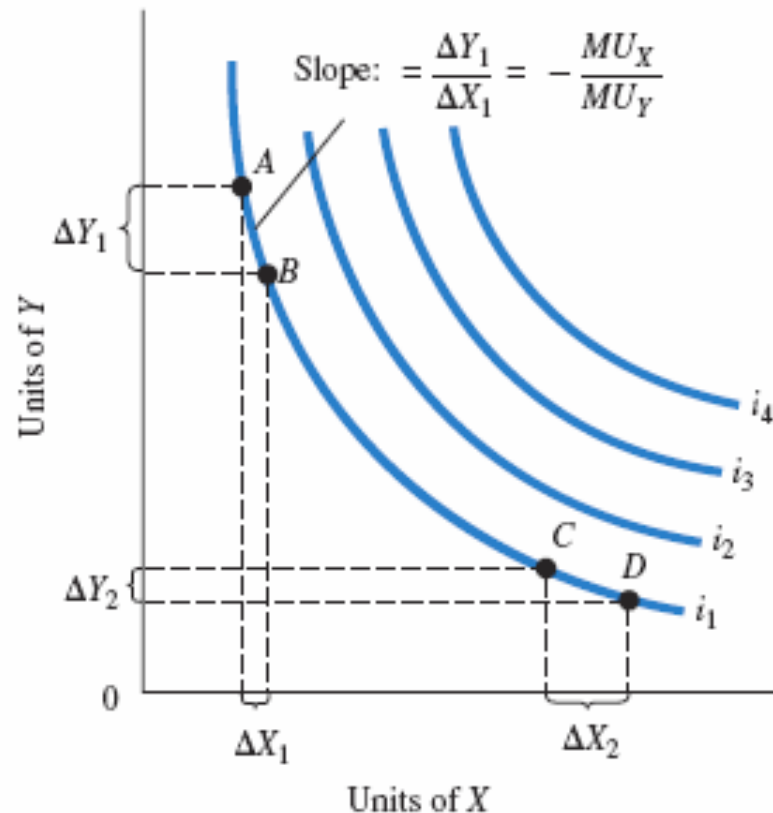
Each consumer has a unique family of indifference curves called a preference map. Higher indifference curves represent higher levels of total utility.

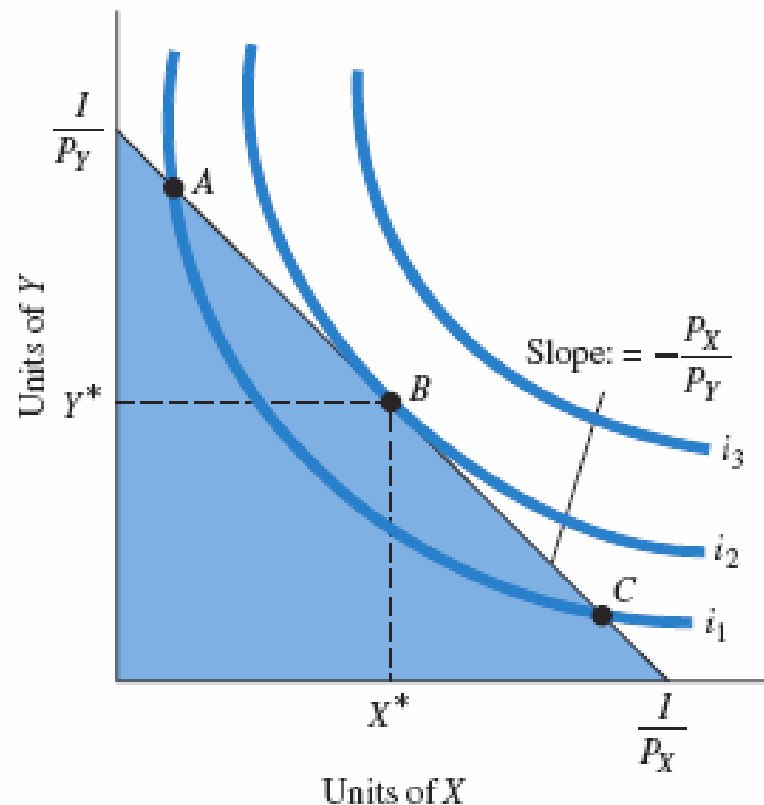# Properties of Indifference Curves

- We can show how the trade-off changes more formally by deriving an expression of the slope of an indifference curve.

- For good X and good Y:

$$MU_X \cdot \Delta X = -(MU_Y \cdot \Delta Y)$$

Rearranging terms, we obtain

$$\frac{\Delta Y}{\Delta X} = -\left(\frac{MU_X}{MU_Y}\right)$$

FIGURE 6A.3 Consumer Utility-Maximizing Equilibrium

Consumers will choose the combination of X and Y that maximizes total utility. Graphically, the consumer will move along the budget constraint until the highest possible indifference curve is reached.

At that point, the budget constraint and the indifference curve are tangent. This point of tangency occurs at X^* and Y^* (point B).

Consumer Choice

- The tangency point between the indifference curve and the budget constraint has implications:

  – They have the same slope:

$$-\frac{MU_X}{MU_Y} = -\frac{P_X}{P_Y}$$

  slope of indifference curve = slope of budget constraint

  – Utility maximization is reached when the marginal utility per dollar spent on *X* equals the marginal utility per dollar spent on *Y*:

$$\frac{MU_X}{P_X} = \frac{MU_Y}{P_Y}$$

Deriving a Demand Curve from Indifference Curves and Budget Constraints

FIGURE 6A.4 Deriving a Demand Curve from Indifference Curves and Budget Constraint
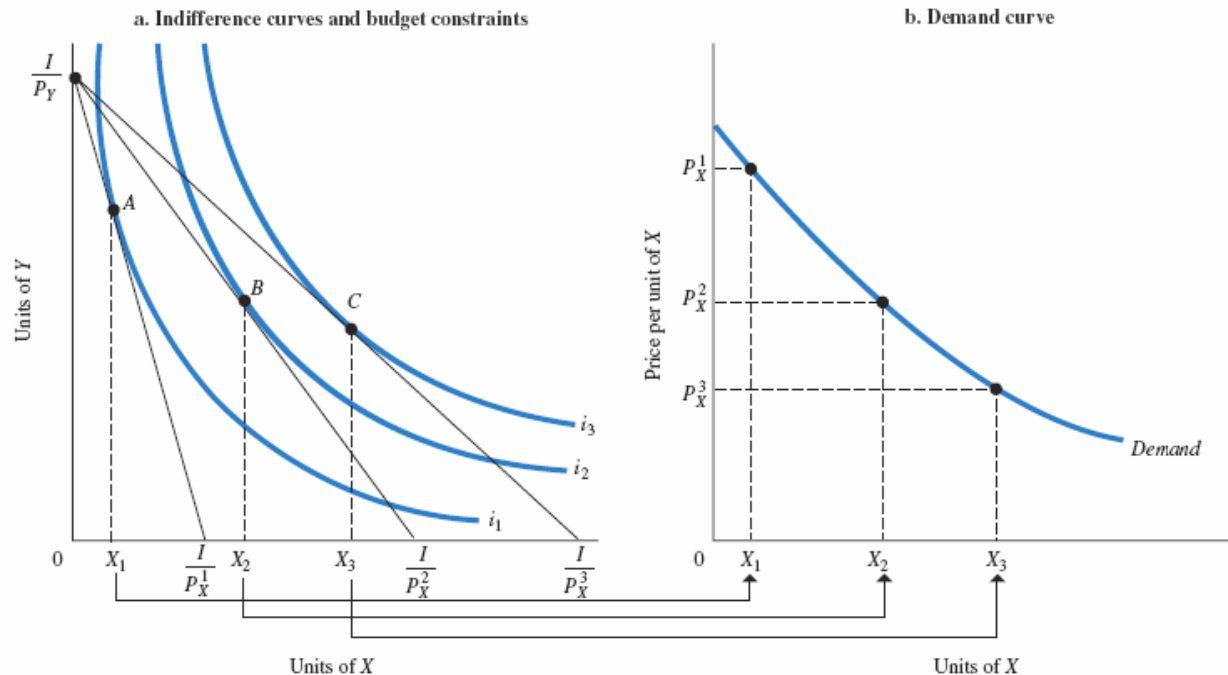
Indifference curves are labeled i_1, i_2, and i_3; budget constraints are shown by the three diagonal lines from I/P_Y to I/P_X^1, I/P_X^2, and I/P_X^3. Lowering the price of X from P_X^1 to P_X^2 and then to P_X^3 swivels the budget constraint to the right. At each price, there is a different utility-maximizing combination of X and Y. Utility is maximized at point A on i_1, point B on i_2, and point C on i_3. Plotting the three prices against the quantities of X chosen results in a standard downward-sloping demand curve.

APPENDIX REVIEW TERMS AND CONCEPTS

- indifference curve

- marginal rate of substitution

- preference map