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The Notebook on

PRINCIPLES OF ECONOMICS

Citation and interpretation of principles of economics

Dec, 5, 2020

Dedication

Notebook on “Principles of Economics”.

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Chapter 1

Ten principles of economics

The word economy comes from the Greek word for “one who manages a household.” Economics is the study of how society manages its scarce resources.

1.1 How people make decisions

PRINCIPLE 1: PEOPLE FACE TRADEOFFS

To get one thing that we like, we usually have to give up another thing that we like. Making decisions requires trading off one goal against another.

PRINCIPLE 2: THE COST OF SOMETHING IS WHAT YOU GIVE UP TO GET IT

Because people face tradeoffs, making decisions requires comparing the costs and benefits of alternative courses of action. The opportunity cost of an item is what you give up to get that item.

PRINCIPLE 3: RATIONAL PEOPLE THINK AT THE MARGIN

Economists use the term marginal changes to describe small incremental adjustments to an existing plan of action. Keep in mind that “margin” means “edge,” so marginal changes are adjustments around the edges of what you are doing.

PRINCIPLE 4: PEOPLE RESPOND TO INCENTIVES

Because people make decisions by comparing costs and benefits, their behavior may change when the costs or benefits change. That is, people respond to incentives.

1.2 How people interact**PRINCIPLE 5: TRADE CAN MAKE EVERYONE BETTER OFF**

Trade allows each person to specialize in the activities he or she does best, whether it is farming, sewing, or home building. By trading with others, people can buy a greater variety of goods and services at lower cost. Countries as well as families benefit from the ability to trade with one another. Trade allows countries to specialize in what they do best and to enjoy a greater variety of goods and services.

Thus, it is important to decide what you want to *specialize* in.

PRINCIPLE 6: MARKETS ARE USUALLY A GOOD WAY TO ORGANIZE ECONOMIC ACTIVITY

In a market economy, the decisions of a central planner are replaced by the decisions of millions of firms and households. Firms decide whom to hire and what to make. Households decide which firms to work for and what to buy with their incomes. These firms and households interact in the marketplace, where prices and self-interest guide their decisions.

In his 1776 book *An Inquiry into the Nature and Causes of the Wealth of Nations*, economist Adam Smith made the most famous observation in all of economics: Households and firms interacting in markets act as if they are guided by an “invisible hand” that leads them to desirable market outcomes.

Prices are the instrument with which the invisible hand directs economic activity. Prices reflect both the value of a good to society and the cost to society of making the good. Because households and firms look at prices when deciding what to buy and sell, they unknowingly take into account the social benefits and costs of their actions. As a result, prices guide these individual decisionmakers

to reach outcomes that, in many cases, maximize the welfare of society as a whole.

PRINCIPLE 7: GOVERNMENTS CAN SOMETIMES IMPROVE MARKET OUTCOMES

Although markets are usually a good way to organize economic activity, this rule has some important exceptions. There are two broad reasons for a government to intervene in the economy: to promote efficiency and to promote equity. That is, most policies aim either to enlarge the economic pie or to change how the pie is divided.

The invisible hand usually leads markets to allocate resources efficiently. Nonetheless, for various reasons, the invisible hand sometimes does not work. Economists use the term *market failure* to refer to a situation in which the market on its own fails to allocate resources efficiently.

One possible cause of market failure is an *externality*. An externality is the impact of one person's actions on the well-being of a bystander. Another possible cause of market failure is *market power*. Market power refers to the ability of a single person (or small group of people) to unduly influence market prices.

1.3 How the economy as a whole works

PRINCIPLE 8: A COUNTRY'S STANDARD OF LIVING DEPENDS ON ITS ABILITY TO PRODUCE GOODS AND SERVICES

PRINCIPLE 9: PRICES RISE WHEN THE GOVERNMENT PRINTS TOO MUCH MONEY

What causes inflation? In almost all cases of large or persistent inflation, the culprit turns out to be the same: growth in the quantity of money. When a government creates large quantities of the nation's money, the value of the money falls.

PRINCIPLE 10: SOCIETY FACES A SHORT-RUN TRADE-OFF BETWEEN INFLATION AND UNEMPLOYMENT

If inflation is so easy to explain, why do policymakers sometimes have trouble ridding the economy of it? One reason is that reducing inflation is often thought to cause a temporary rise in unemployment. The curve that illustrates this tradeoff between inflation and unemployment is called the Phillips curve, after the economist who first examined this relationship.

Why do we face this short-run tradeoff? According to a common explanation, it arises because some prices are slow to adjust. Suppose, for example, that the government reduces the quantity of money in the economy. In the long run, the only result of this policy change will be a fall in the overall level of prices. Yet not all prices will adjust immediately. It may take several years before all firms issue new catalogs, all unions make wage concessions, and all restaurants print new menus. That is, prices are said to be sticky in the short run.

Because prices are sticky, various types of government policy have short-run effects that differ from their long-run effects. When the government reduces the quantity of money, for instance, it reduces the amount that people spend. Lower spending, together with prices that are stuck too high, reduces the quantity of goods and services that firms sell. Lower sales, in turn, cause firms to lay off workers. Thus, the reduction in the quantity of money raises unemployment temporarily until prices have fully adjusted to the change.

Chapter 2

Thinking like an economist

Every field of study has its own language and its own way of thinking. The most important is to learn the economist's way of thinking.

2.1 The economist as scientist

Economists try to address their subject with a scientist's objectivity:

- devise theories
- collect data
- analyze these data in an attempt to verify or refute their theories

The essence of science is the scientific method – the dispassionate development and testing of theories about how the world works.

As Albert Einstein once put it, “The whole of science is nothing more than the refinement of everyday thinking”.

2.1.1 The scientific method

The scientific method:

1. observation
2. theory

3. more observation

Although economists use theory and observation like other scientists, they do face an obstacle that makes their task especially challenging: Experiments are often difficult in economics.

2.1.2 The role of assumptions

Assumptions can make the world easier to understand. The art in scientific thinking is deciding which assumptions to make. Economists use different assumptions when studying the short-run and long-run effects of a change in the quantity of money.

2.1.3 Economic models

Economists use models that are most often composed of diagrams and equations to learn about the world. Economic models omit many details to allow us to see what is truly important. An economist's model does not include every feature of the economy. All models are built with assumptions. Economists assume away many of the details of the economy that are irrelevant for studying the question at hand. All models simplify reality in order to improve our understanding of it.

2.1.4 The circular-flow diagram

Circular-flow diagram: a visual model of the economy that shows how dollars flow through markets among households and firms.

2.1.5 The production possibilities frontier

Most economics models are built using the tools of mathematics. Here we consider one of the simplest such models, called the production possibilities frontier. The **production possibilities frontier** is a graph that shows the various combinations of output that the economy can possibly produce given the available factors of production and the available production technology that firms can use to turn these factors into output. The graph is shown in Figure 2.2.

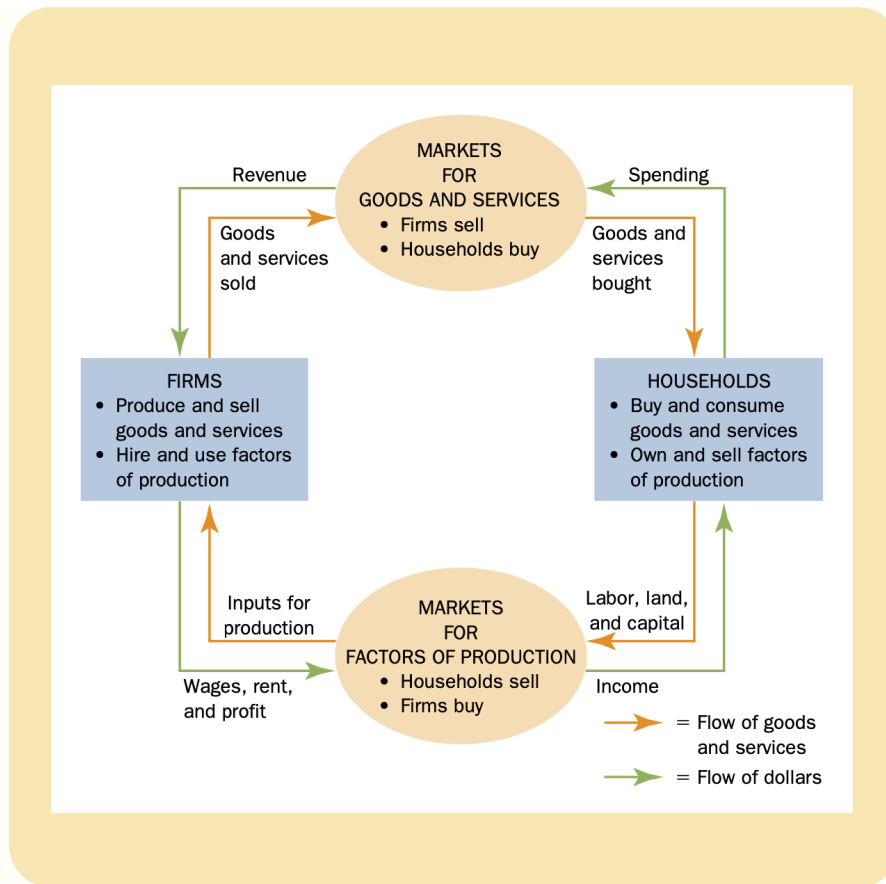


Figure 2.1: The circular flow

An outcome is said to be **efficient** if the economy is getting all it can from the scarce resources it has available. Points on (rather than inside) the production possibilities frontier represent efficient levels of production.

2.1.6 Microeconomics and macroeconomics

The field of economics is traditionally divided into two broad subfields. **Microeconomics** is the study of how households and firms make decisions and how they interact in specific markets. **Macroeconomics** is the study of economywide phenomena.

Microeconomics and macroeconomics are closely intertwined. Because changes

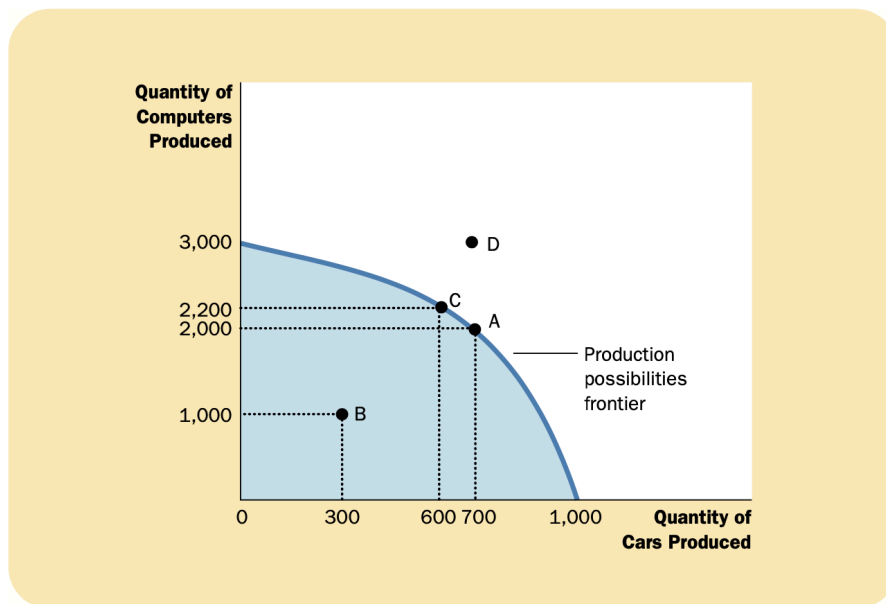


Figure 2.2: The production possibilities frontier

in the overall economy arise from the decisions of millions of individuals, it is impossible to understand macroeconomic developments without considering the associated microeconomic decisions. Despite the inherent link between microeconomics and macroeconomics, the two fields are distinct.

2.2 The economist as policy adviser

When economists are trying to explain the world, they are **scientists**. When they are trying to help improve it, they are **policy advisers**.

2.2.1 Positive versus normative analysis

Because scientists and policy advisers have different goals, they use language in different ways. In general, statements about the world are of two types. One type is positive. **Positive statements** are descriptive. They make a claim about how the world **is**. A second type of statement is normative. **Normative statements** are prescriptive. They make a claim about how the world **ought to be**.

A key difference between positive and normative statements is how we judge their validity. We can, in principle, confirm or refute positive statements by examining evidence. By contrast, evaluating normative statements involves values as well as facts.

Much of economics just tries to explain how the economy works. Yet often the goal of economics is to improve how the economy works. When you hear economists making normative statements, you know they have crossed the line from scientist to policy adviser.

2.3 Why economists disagree

Why do economists so often appear to give conflicting advice to policymakers? There are two basic reasons:

- Economists may disagree about the validity of alternative positive theories about how the world works.
- Economists may have different values and, therefore, different normative views about what policy should try to accomplish.

Because of differences in scientific judgments and differences in values, some disagreement among economists is inevitable. Yet one should not overstate the amount of disagreement. In many cases, economists do offer a united view.

You might find it helpful to keep in mind some advice from the great economist John Maynard Keynes:

The study of economics does not seem to require any specialized gifts of an unusually high order. Is it not . . . a very easy subject compared with the higher branches of philosophy or pure science? An easy subject, at which very few excel! The paradox finds its explanation, perhaps, in that the master-economist must possess a rare combination of gifts. He must be mathematician, historian, statesman, philosopher in some degree. He must understand symbols and speak in words. He must contemplate the particular in terms of the general, and touch abstract and concrete in the same flight of thought. He must study the present in the light of the past for the purposes of the future. No part of mans nature or his institutions must lie entirely outside his regard. He must be purposeful and disinterested in a simultaneous mood; as aloof and incorruptible as an artist, yet sometimes as near the earth as a politician.

Chapter 3

Interdependence and the gains from trade

3.1 The principle of comparative advantage

3.1.1 Absolute advantage

Economists use the term **absolute advantage** when comparing the productivity of one person, firm, or nation to that of another. The producer that requires a smaller quantity of inputs to produce a good is said to have an absolute advantage in producing that good.

3.1.2 Opportunity cost and comparative advantage

The opportunity cost of some item is what we give up to get that item. Economists use the term **comparative advantage** when describing the opportunity cost of two producers. The producer who has the smaller opportunity cost of producing a good is said to have a comparative advantage in producing that good.

3.1.3 Comparative advantage and trade

Differences in opportunity cost and comparative advantage create the gains from trade. When each person specializes in producing the good for which he or she has a comparative advantage, total production in the economy rises, and

this increase in the size of the economic pie can be used to make everyone better off. In other words, as long as two people have different opportunity costs, each can benefit from trade by obtaining a good at a price lower than his or her opportunity cost of that good.

Trade can benefit everyone in society because it allows people to specialize in activities in which they have a comparative advantage.

Chapter 4

The market forces and supply and demand

Supply and demand are the two words that economists use most often — and for good reason. Supply and demand are the forces that make market economies work. They determine the quantity of each good produced and the price at which it is sold. If you want to know how any event or policy will affect the economy, you must think first about how it will affect supply and demand.

4.1 Market and competition

The terms supply and demand refer to the behavior of people as they interact with one another in markets. A market is a group of buyers and sellers of a particular good or service. The buyers as a group determine the demand for the product, and the sellers as a group determine the supply of the product.

4.1.1 Competitive markets

A competitive market is a market in which there are many buyers and many sellers so that each has a negligible impact on the market price.

4.1.2 Competition: perfect and otherwise

We assume the market is perfectly competitive for study. Perfectly competitive markets are defined by two primary characteristics:

1. the goods being offered for sale are all the same
2. the buyers and sellers are so numerous that no single buyer or seller can influence the market price.

Because buyers and sellers in perfectly competitive markets must accept the price the market determines, they are said to be **price takers**.

Not all goods and services, however, are sold in perfectly competitive markets. Some markets have only one seller, and this seller sets the price. Such a seller is called a **monopoly**.

Some markets fall between the extremes of perfect competition and monopoly. One such market, called an **oligopoly**, has a few sellers that do not always compete aggressively. Airline routes are an example. If a route between two cities is serviced by only two or three carriers, the carriers may avoid rigorous competition to keep prices high. Another type of market is **monopolistically competitive**; it contains many sellers, each offering a slightly different product. Because the products are not exactly the same, each seller has some ability to set the price for its own product. An example is the software industry. Many word processing programs compete with one another for users, but every program is different from every other and has its own price.

4.2 Demand

quantity demand: the amount of a good that buyers are willing and able to purchase.

4.2.1 What determines the quantity an individual demands?

Price

law of demand: Other things equal, when the price of a good rises, the quantity demanded of the good falls.

Income

If the demand for a good falls when income falls, the good is called a **normal good**. If the demand for a good rises when income falls, the good is called an **inferior good**.

Price of related goods

When a fall in the price of one good reduces the demand for another good, the two goods are called **substitutes**. When a fall in the price of one good raises the demand for another good, the two goods are called complements.

Tastes

The most obvious determinant of your demand is your tastes. Economists normally do not try to explain peoples tastes because tastes are based on historical and psychological forces that are beyond the realm of economics. Economists do, however, examine what happens when tastes change.

Expectations

Your expectations about the future may affect your demand for a good or service today.

4.2.2 The demand schedule and the demand curve

Imagine that we hold all these variables constant except one — the price. Lets consider how the price affects the quantity of ice cream demanded.

PRICE OF ICE-CREAM CONE	QUANTITY OF CONES DEMANDED
\$0.00	12
0.50	10
1.00	8
1.50	6
2.00	4
2.50	2
3.00	0

Figure 4.1: Demand schedule

Table 4.1 is a **demand schedule**, able that shows the relationship between the price of a good and the quantity demanded. Figure 4.2 graphs the numbers in Table 4.1. By convention, the price of ice cream is on the vertical axis, and

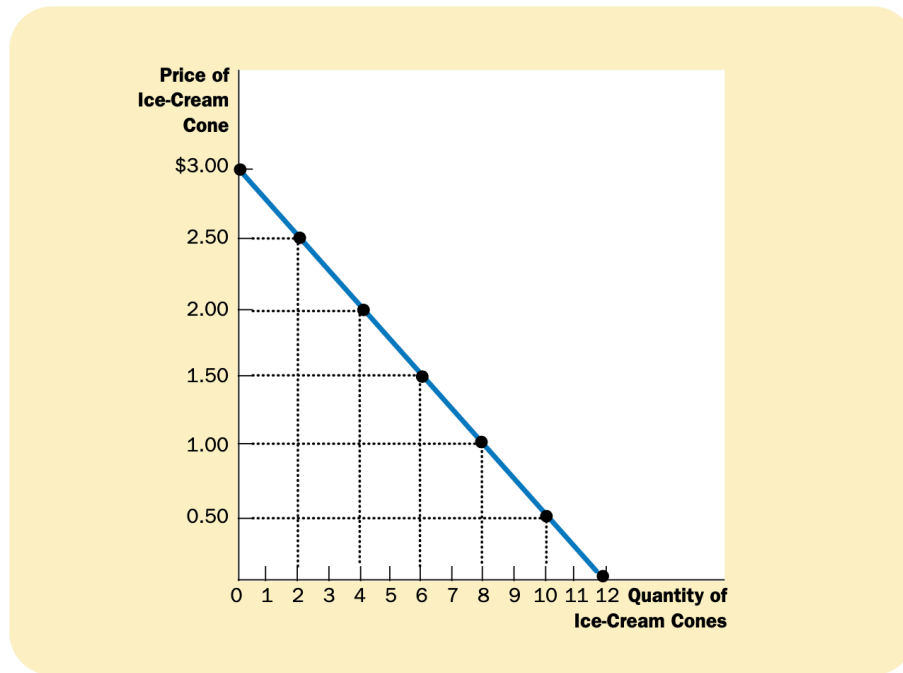


Figure 4.2: Demand curve

the quantity of ice cream demanded is on the horizontal axis. The downward-sloping line relating price and quantity demanded is called the **demand curve**.

4.2.3 Ceteris paribus

Economists use the term **ceteris paribus** to signify that all the relevant variables, except those being studied at that moment, are held constant. The Latin phrase literally means “other things being equal.” The demand curve slopes downward because, *ceteris paribus*, lower prices mean a greater quantity demanded.

4.2.4 Market demand versus individual demand

To analyze how markets work, we need to determine the **market demand**, which is the sum of all the individual demands for a particular good or service.

4.2.5 Shift in the demand curve

Whenever any determinant of demand changes, other than the good's price, the demand curve shifts. As Figure 4.3 shows, any change that increases the quantity demanded at every price shifts the demand curve to the right. Similarly, any change that reduces the quantity demanded at every price shifts the demand curve to the left.

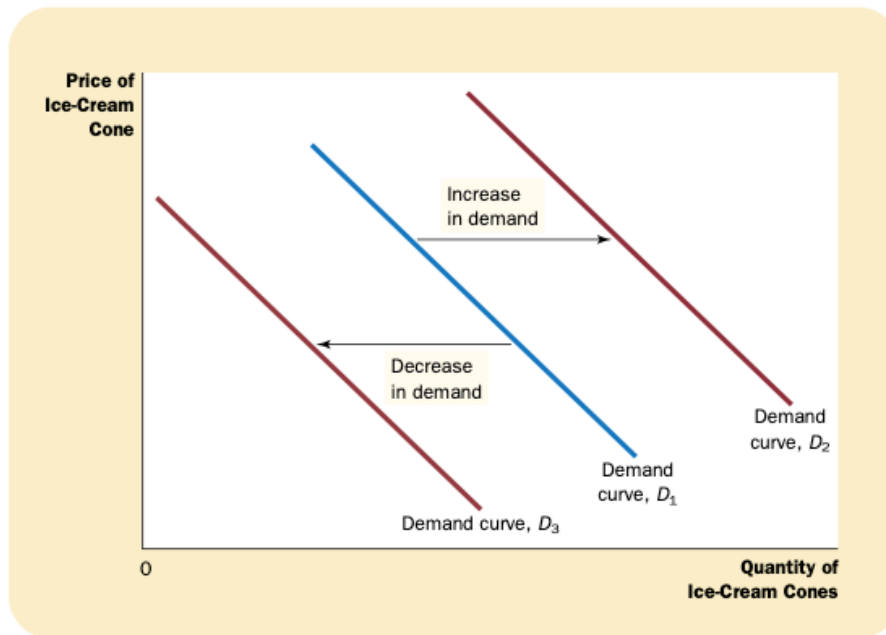


Figure 4.3: Shift in demand curve

The demand curve shows what happens to the quantity demanded of a good when its price varies, holding constant all other determinants of quantity demanded. When one of these other determinants changes, the demand curve shifts.

4.3 Supply

The **quantity supplied** of any goods or services is the amount that sellers are willing and able to sell.

4.3.1 What determine the quantity an individual supplies?

Price

law of supply: Other things equal, when the price of a good rises, the quantity supplied of the good also rises.

Input prices

The supply of a good is negatively related to the price of the inputs used to make the good.

Technology

The advance in technology raised the supply.

Expectations

The amount of goods or services you supply today may depend on your expectations of the future.

4.3.2 The supply schedule and the supply curve

PRICE OF ICE-CREAM CONE	QUANTITY OF CONES SUPPLIED
\$0.00	0
0.50	0
1.00	1
1.50	2
2.00	3
2.50	4
3.00	5

Figure 4.4: Supply schedule

Table 4.4 is called the **supply schedule**. Figure 4.5 is called the **supply curve**.

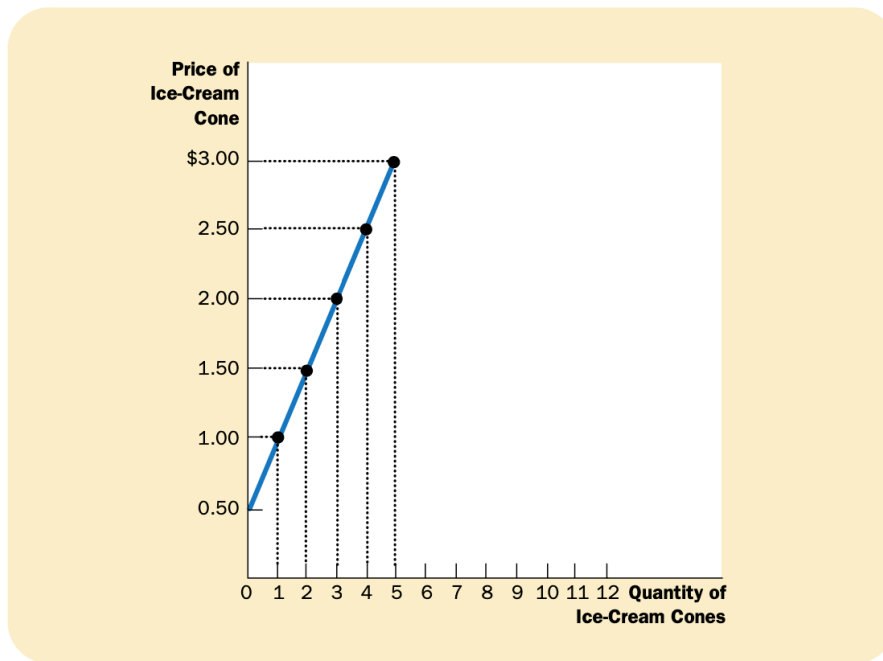


Figure 4.5: Supply curve

4.3.3 Market supply vs individual supply

Market supply is the sum of the supplies of all sellers.

4.3.4 Shifts in the supply curve

Whenever there is a change in any determinant of supply, other than the goods price, the supply curve shifts. As Figure 4.6 shows, any change that raises quantity supplied at every price shifts the supply curve to the right. Similarly, any change that reduces the quantity supplied at every price shifts the supply curve to the left.

The supply curve shows what happens to the quantity supplied of a good when its price varies, holding constant all other determinants of quantity supplied. When one of these other determinants changes, the supply curve shifts.

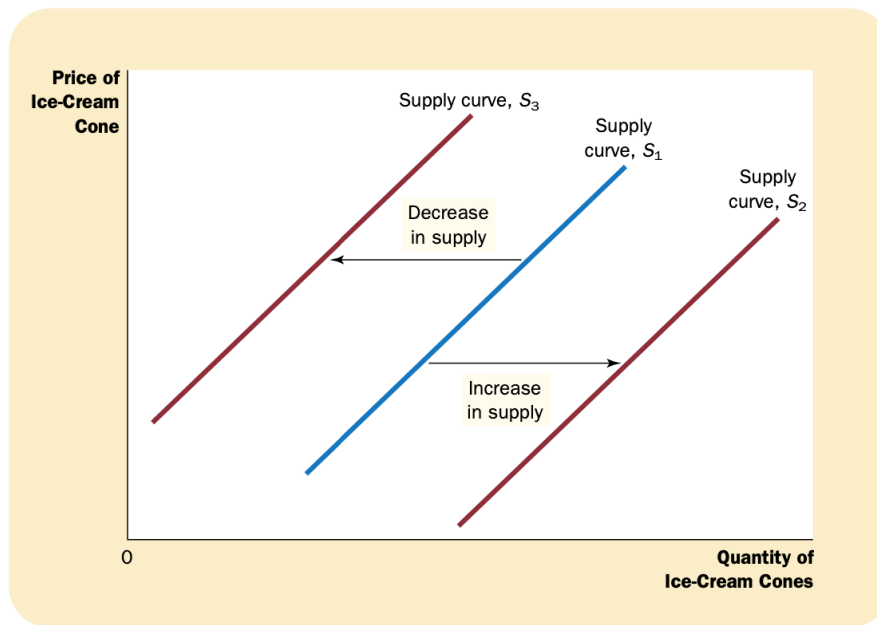


Figure 4.6: Shifts in the supply curve

4.4 Supply and demand together

4.7 shows the market supply curve and market demand curve together. There is one point at which the supply and demand curves intersect; this point is called the market's **equilibrium**. The price at which these two curves cross is called the **equilibrium price**, and the quantity is called the **equilibrium quantity**.

The dictionary defines the word equilibrium as a situation in which various forces are in balance and this also describes a market's equilibrium. At the equilibrium price, the quantity of the good that buyers are willing and able to exactly balances the quantity that sellers are willing and able to sell. The equilibrium price is sometimes called the **market-clearing price** because, at this price, everyone in the market has been satisfied: Buyers have bought all they want to buy, and sellers have sold all they want to sell.

The actions of buyers and sellers naturally move markets toward the equilibrium of supply and demand.

surplus: a situation in which quantity supplied is greater than quantity

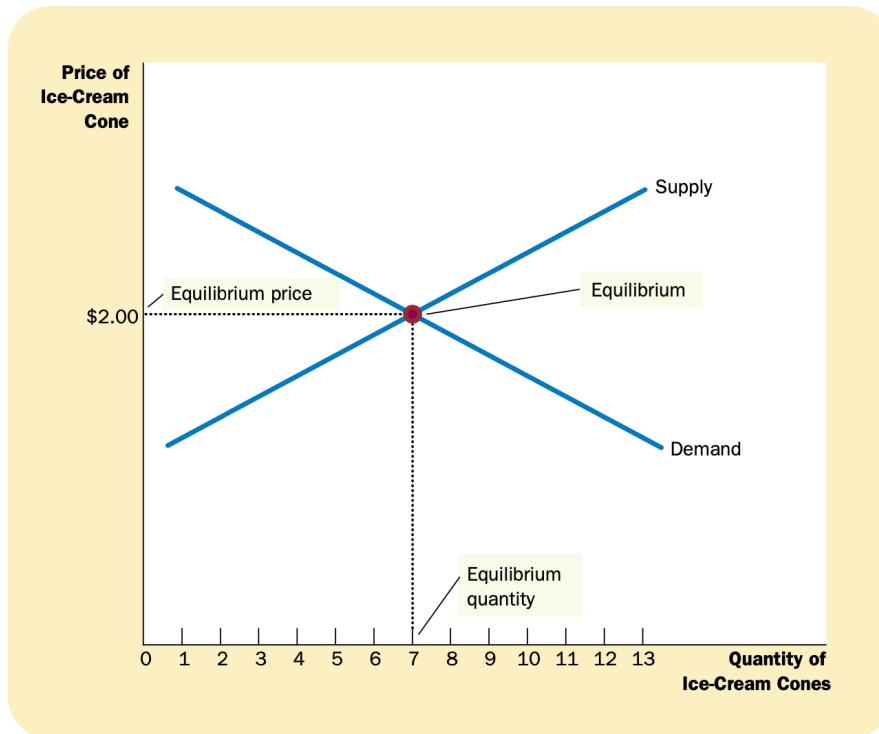


Figure 4.7: The equilibrium of supply and demand

demand.

shortage: a situation in which quantity demand is greater than quantity supplied.

law of supply and demand: The price of any good adjusts to bring the supply and demand for that good into balance.

4.4.1 Three steps to analyzing changes in equilibrium

The equilibrium price and quantity depend on the position of the supply and demand curves. When some event shifts one of these curves, the equilibrium in the market changes. The analysis of such a change is called **comparative statics** because it involves comparing two static situations — an old and a new equilibrium.

When analyzing how some event affects a market, we proceed in three steps:

1. Decide whether the event shifts the supply curve or demand curve (or perhaps both).
2. Decide which direction the curve shifts.
3. Use the supply-and-demand diagram to see how the shift changes the equilibrium

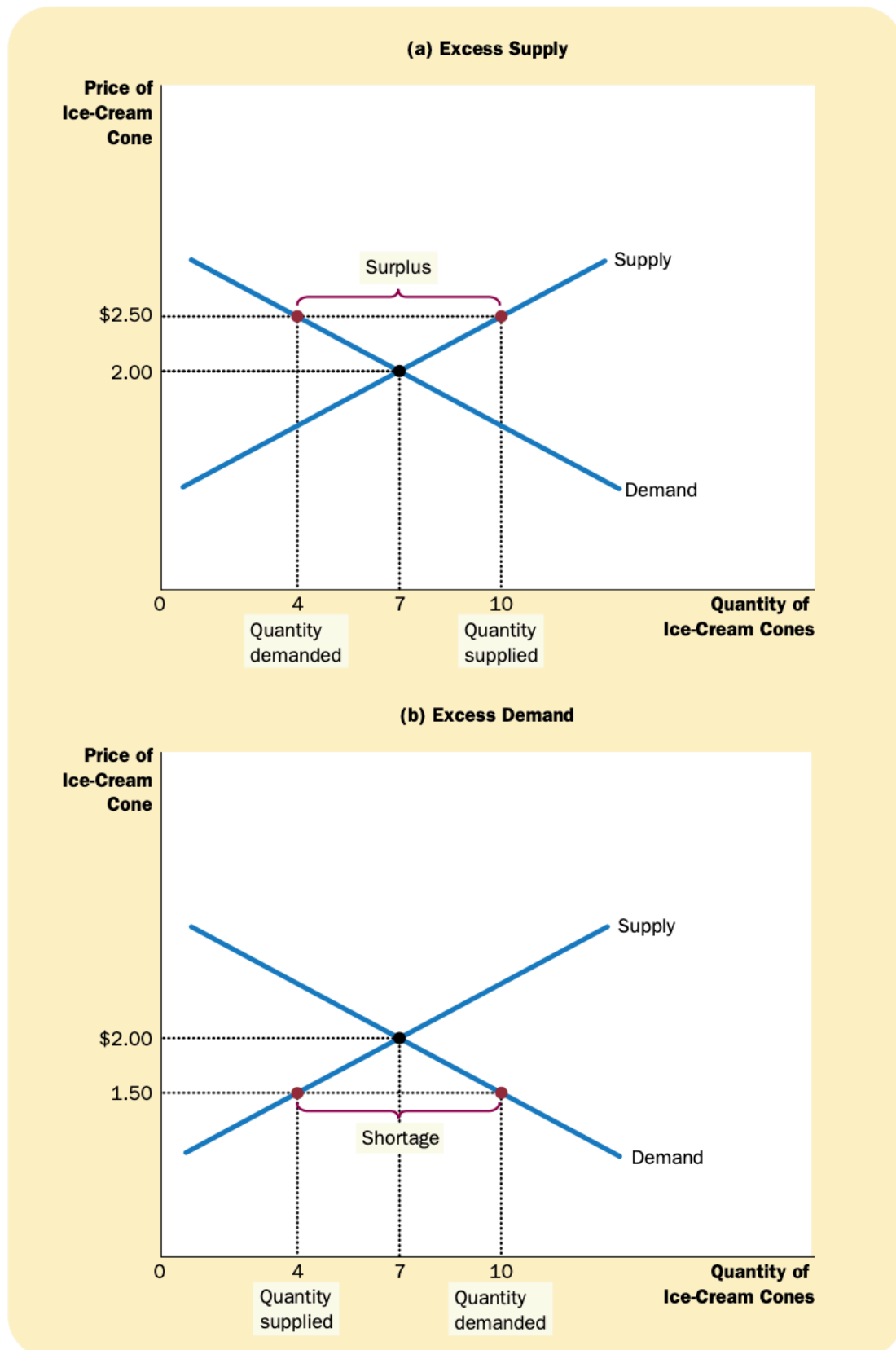


Figure 4.8: Surplus and shortage

Chapter 5

Elasticity and its application

5.1 The elasticity of demand

To measure how much demand responds to changes in its determinants, economists use the concept of **elasticity**.

5.1.1 The price elasticity of demand and its determinants

The **price elasticity of demand** measures how much the quantity demanded responds to a change in price. Demand for a good is said to be **elastic** if the quantity demanded responds substantially to changes in the price. Demand is said to be **inelastic** if the quantity demanded responds only slightly to changes in the price.

Necessities versus luxuries

Necessities tend to have inelastic demands, whereas luxuries have elastic demands.

Availability of close substitutes

Goods with close substitutes tend to have more elastic demand because it is easier for consumers to switch from that good to others.

Definition of the market

The elasticity of demand in any market depends on how we draw the boundaries of the market. Narrowly defined markets tend to have more elastic demand than broadly defined markets, because it is easier to find close substitutes for narrowly defined goods.

Time horizon

Goods tend to have more elastic demand over longer time horizons.

5.1.2 Computing the price elasticity of demand

$$\text{Price elasticity of demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}} \quad (5.1)$$

5.1.3 The midpoint method

If you try calculating the price elasticity of demand between two points on a demand curve, you will quickly notice an annoying problem: The elasticity from point A to point B seems different from the elasticity from point B to point A. One way to avoid this problem is to use the **midpoint method** for calculating elasticities.

We can express the midpoint method with the following formula for the price elasticity of demand between two points, denoted (Q_1, P_1) and (Q_2, P_2) :

$$\text{Price elasticity of demand} = \frac{(Q_2 - Q_1)/[(Q_2 + Q_1)/2]}{(P_2 - P_1)/[(P_2 + P_1)/2]} \quad (5.2)$$

5.1.4 The variety of demand curves

Economists classify demand curves according to their elasticity. Demand is **elastic** when the elasticity is greater than 1, so that quantity moves proportionately more than the price. Demand is **inelastic** when the elasticity is less than 1, so that quantity moves proportionately less than the price. If the elasticity is exactly 1, so that quantity moves the same amount proportionately as price, demand is said to have **unit elasticity**.

5.1.5 Total revenue and the price elasticity of demand

total revenue the amount paid by buyers and received by sellers of a good, computed as the price of the good P times the quantity sold Q

$$\text{total revenue} = P \times Q \quad (5.3)$$

As show in Figure 5.1.

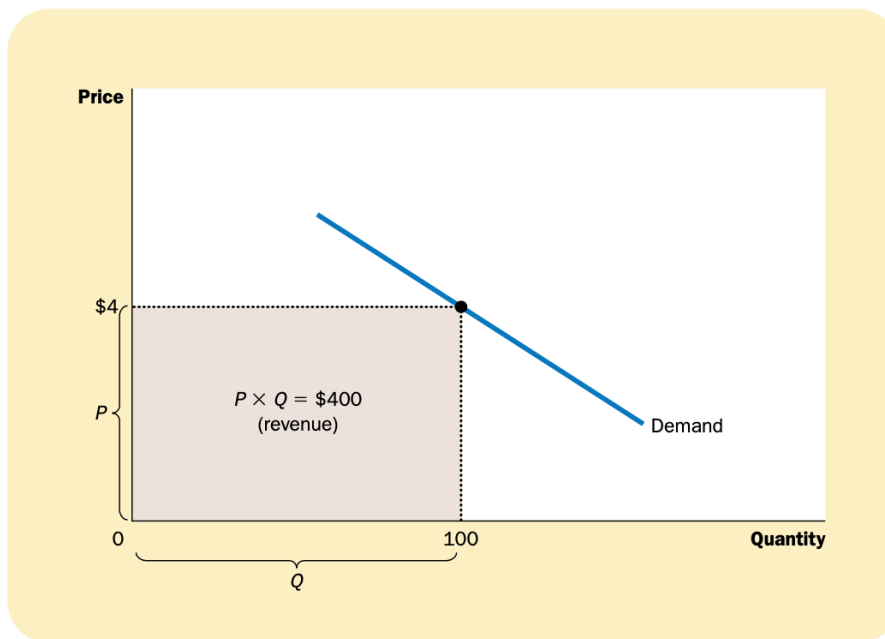


Figure 5.1: Total revenue

General rule:

- When a demand curve is inelastic (a price elasticity less than 1), a price increase raises total revenue, and a price decrease reduces total revenue.
- When a demand curve is elastic (a price elasticity greater than 1), a price increase reduces total revenue, and a price decrease raises total revenue.
- In the special case of unit elastic demand (a price elasticity exactly equal to 1), a change in the price does not affect total revenue.

As shown in Figure 5.2 and 5.3.

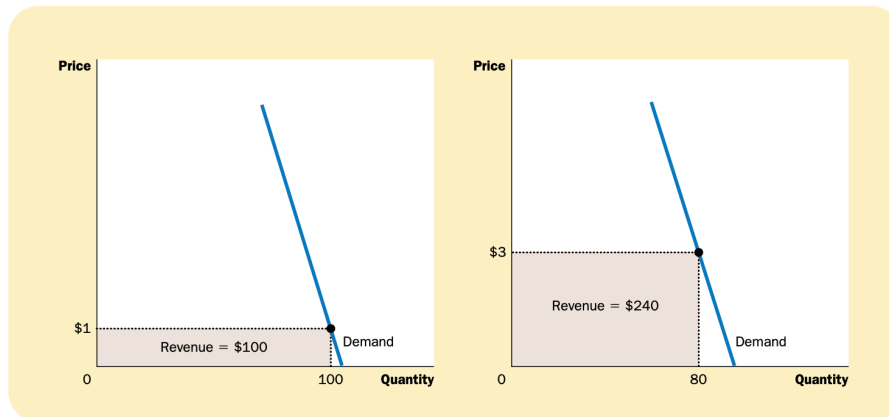


Figure 5.2: Inelastic demand

5.1.6 Other demand elasticities

The income elasticity of demand

Economists use the **income elasticity of demand** to measure how the quantity demanded changes as consumer income changes.



Figure 5.3: Elastic demand

$$\text{Income elasticity of demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}} \quad (5.4)$$

The cross-price elasticity of demand

Economists use the **cross-price elasticity of demand** to measure how the quantity demanded of one good changes as the price of another good changes.

$$\text{Cross-price elasticity of demand} = \frac{\text{Percentage change in quantity demanded of good 1}}{\text{Percentage change in the price of good 2}} \quad (5.5)$$

5.2 The elasticity of supply

5.2.1 The price elasticity of supply and its determinants

The **price elasticity of supply** measures how much the quantity supplied responds to changes in the price.

5.2.2 Computing the price elasticity of supply

$$\text{Price elasticity of supply} = \frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}} \quad (5.6)$$

Chapter 6

Supply, demand and government policies

6.1 Controls on prices

price ceiling a legal maximum on the price at which a good can be sold
price floor a legal minimum on the price at which a good can be sold

6.1.1 How price ceilings affect market outcomes

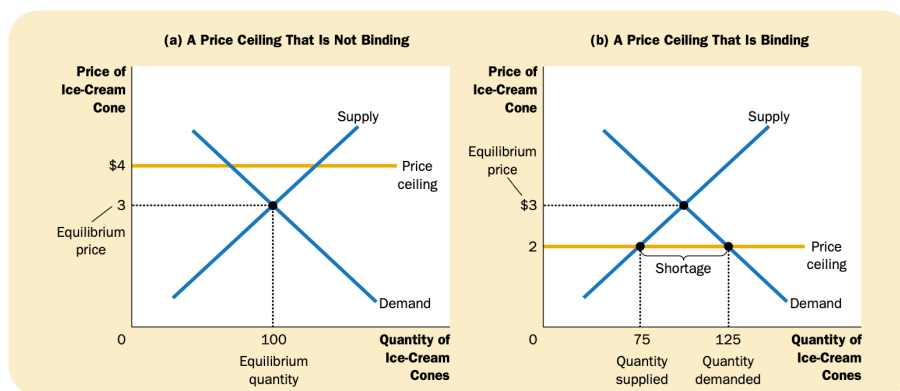


Figure 6.1: A market with price ceiling

When the government imposes a binding price ceiling on a competitive market, a shortage of the good arises, and sellers must ration the scarce goods among the large number of potential buyers.

6.1.2 How price floors affect market outcomes

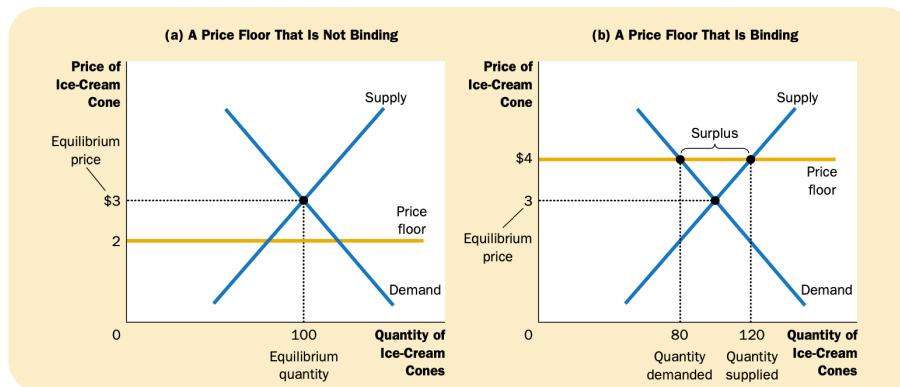


Figure 6.2: A market with price floor

When the government imposes a binding price floor on a competitive market, a surplus of the good arises.

6.2 Taxes

tax incidence: the study of who bears the burden of taxation

6.2.1 How taxes on buyers affect market outcomes

3 steps:

1. the tax affect the demand curve
2. the demand curve shifts left (or download)
3. the new equilibrium

Two general lessons:

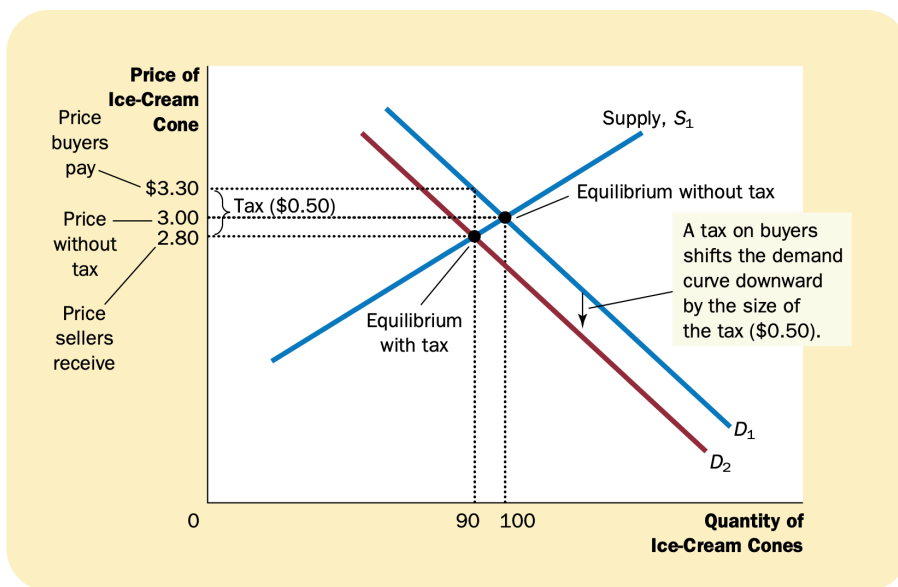


Figure 6.3: A tax on buyers

- Taxes discourage market activity. When a good is taxed, the quantity of the good sold is smaller in the new equilibrium.
- Buyers and sellers share the burden of taxes. In the new equilibrium, buyers pay more for the good, and sellers receive less.

6.2.2 How taxes on sellers affect market outcomes

3 steps:

- the tax affect the supply curve
- the supply curve shifts left (or up)
- the new equilibrium

Comparing Figure 6.3 and Figure 6.4 leads to a surprising conclusion: Taxes on buyers and taxes on sellers are equivalent.

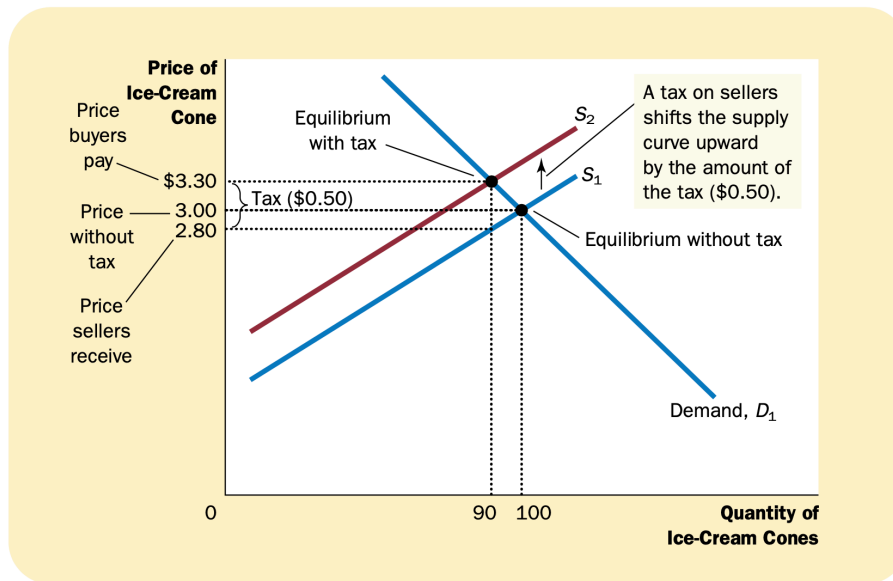


Figure 6.4: A tax on sellers

6.2.3 Elasticity and tax incidence

A tax burden falls more heavily on the side of the market that is less elastic.

Why is this true?

In essence, the elasticity measures the willingness of buyers or sellers to leave the market when conditions become unfavorable. A small elasticity of demand means that buyers do not have good alternatives to consuming this particular good. A small elasticity of supply means that sellers do not have good alternatives to producing this particular good. When the good is taxed, the side of the market with fewer good alternatives cannot easily leave the market and must, therefore, bear more of the burden of the tax.

Most labor economists believe that the supply of labor is much less elastic than the demand. This means that workers, rather than firms, bear most of the burden of the payroll tax.

consumers-producers-and-the-efficiency-of-markets

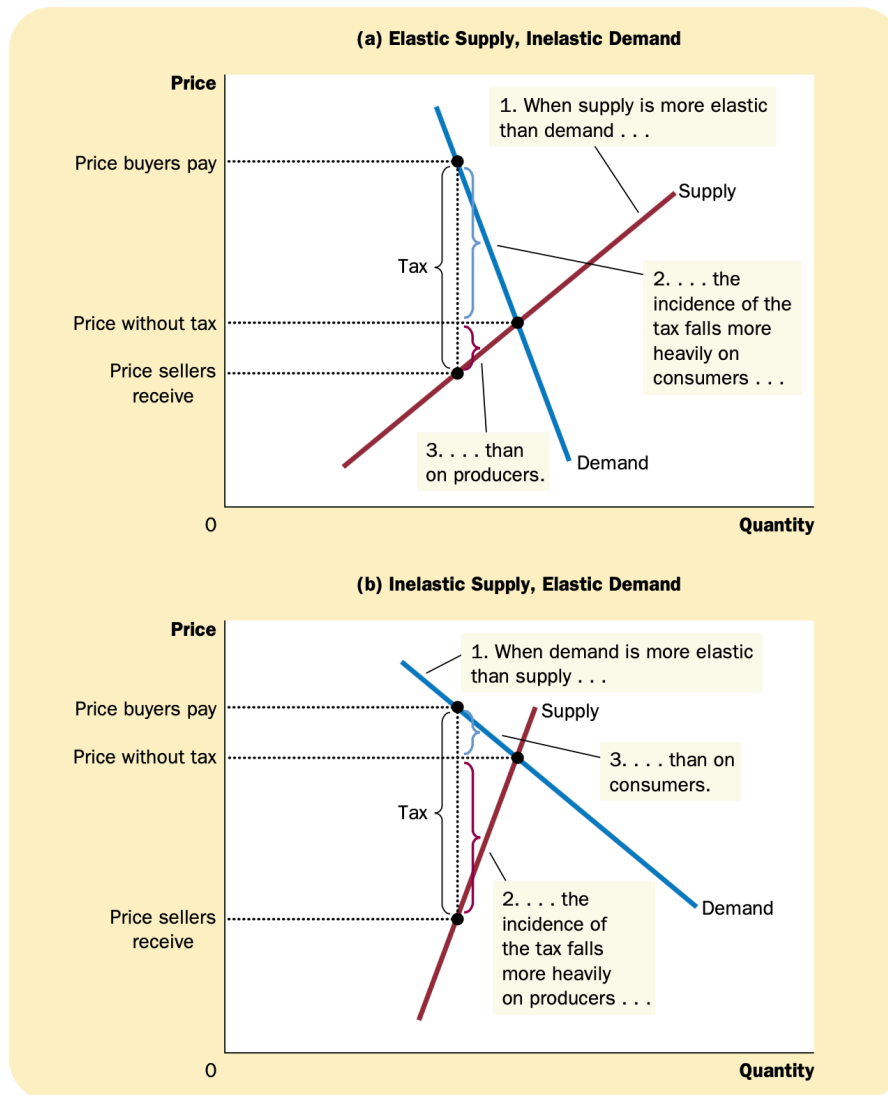


Figure 6.5: How the burden of a tax is divided

Chapter 7

Consumers, producers, and the efficiency of markets

