Chapter 2
Supply and Demand

Learning Objectives

After reading this chapter you should be able to:

LO1 Illustrate and explain the economic model of supply and demand.

LO2 Define many terms, including supply, demand, quantity supplied, and quantity demanded.

LO3 Utilize the intuition behind the supply and demand relationships as well as the variables that can change these relationships to manipulate the supply and demand model.

Teaching Tip
Emphasize that this chapter is fundamental to nearly everything they will study in the course and that this is not a chapter they can fake.

SUPPLY AND DEMAND DEFINED

Some Key Definitions

- **Supply and Demand**: the name of the most important model in all economics
- **Price**: the amount of money that must be paid for a unit of output
- **Output**: the good or service produced for sale
- **Market**: any mechanism by which buyers and sellers negotiate price
- **Consumers**: those people in a market who are wanting to exchange money for goods or services
- **Producers**: those people in a market who are wanting to exchange goods or services for money
- **Equilibrium Price**: the price at which no consumers wish they could have purchased more goods at that price; no producers wish that they could have sold more
- **Equilibrium Quantity**: the amount of output exchanged at the equilibrium price
- **Quantity demanded**: how much consumers are willing and able to buy at a particular price during a particular period of time
- **Quantity supplied**: how much firms are willing and able to sell at a particular price during a particular period of time

Teaching Tip
Acknowledge the fact that popular press references to supply or demand often are references to quantity supplied or quantity demanded.

The Scientific Method and Ceteris Paribus

- **Scientists**
  - conduct experiments in laboratories.
  - use replication and verification to ensure the accuracy of their conclusions.
- **Social Scientists**
  - cannot experiment on their subjects.
  - must use models and look at the effects of individual variables within those models.
- **Economists**
  - hold variables constant within models to examine the effect of other variables.
  - use the Latin phrase **Ceteris Paribus** meaning "holding other things equal"

Teaching Tips

1) *Discuss how difficult it is to conduct controlled experiments in economics. Cite the Rand Corporation insurance study where people were given different health insurance plans to see how they would react (i.e. consuming more, seeing the doctor more).*
2) ***Let students discuss** the morality of experiments such as this.*

Markets Box

- **Capitalism**
  - free markets in financial capital as well as goods and services
  - freedom to borrow or lend
  - profits go to the owners of capital
- **Communism**
  - capital and the profit that it generates is controlled by a government authority.
  - a government authority decides how the money is used.
- **Socialism**
  - a significant part of the profit generated by financial capital goes to government in the form of taxes.
  - a government uses the tax money to counter the wealth impacts of the distribution of profit.

Teaching Tips

1) *Note that the index comes from the Heritage Foundation and the Wall Street Journal. Refer to their political bent.*
2) *Use this as an example of the difference between normative and positive.*
3) ***Let students discuss** whether this appears to be an objectively derived set of lists. Is a normative list. Note the use of the word "free." Is that not normative.*

Demand and Supply

- **Demand** is the relationship between price and quantity demanded, ceteris paribus.
- **Supply** is the relationship between price and quantity supplied, ceteris paribus.

THE SUPPLY AND DEMAND MODEL

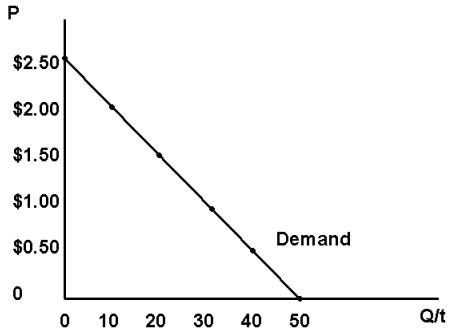
Demand

- The **Demand Schedule** presents, in tabular form, the price and quantity demanded for a good.

Table 2.1
Demand Schedule for Soft Drinks at a Football Game

Price	Your Quantity Demanded	Crowd Quantity Demanded (10,000 fans just like you)*
0	5	50,000
$0.50	4	40,000
$1.00	3	30,000
$1.50	2	20,000
$2.00	1	10,000
$2.50	0	0

- This is ceteris paribus at work, holding the number and type of fans constant.



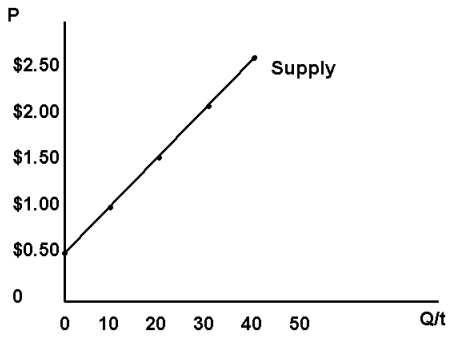
Drawing Tip
Plot each point individually from the Demand Schedule.

Supply

•The **Supply Schedule** presents, in tabular form, the price and quantity supplied for a good.

Table 2.2
Supply Schedule for Soft Drinks at a Football Game

Price	1 Concession Stand's Quantity Supplied	The Stadium's Quantity Supplied (All 10 Concession Stands)
0	0	0
$0.50	0	0
$1.00	1,000	10,000
$1.50	2,000	20,000
$2.00	3,000	30,000
$2.50	4,000	40,000



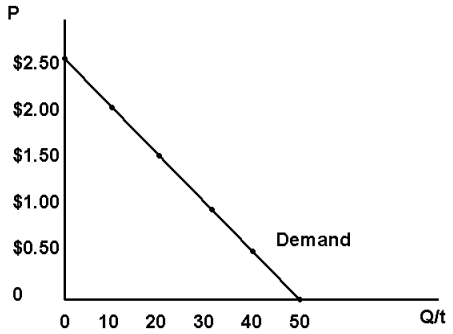
Drawing Tip
Plot each point individually from the Supply Schedule.

Equilibrium, Shortage and Surplus

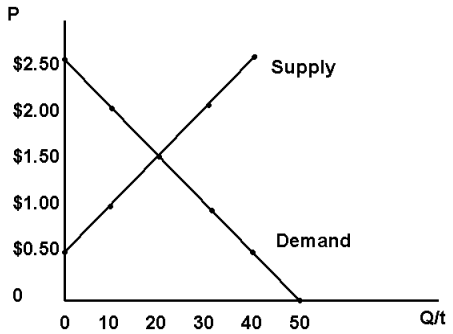
- **Equilibrium** is the point where the amount that consumers want to buy and the amount that firms want to sell are the same. This occurs where the supply curve and the demand curve cross.
- **Shortage (Excess Demand):** the condition where firms do not want to sell as many as consumers want to buy.
- **Surplus (Excess Supply):** the condition where firms want to sell more than consumers want to buy

Table 2.3
Supply and Demand Schedules
with Shortage and Surplus

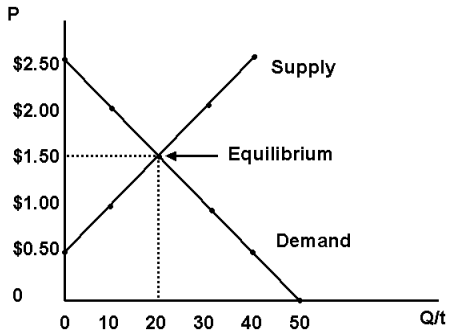
Price	Individual Quantity Demanded	Crowd Quantity Demanded	1 Concession Stand's Quantity Supplied	The Stadium's Quantity Supplied	Shortage (Excess Demand)	Surplus (Excess Supply)
0	5	50,000	0	0	50,000	
$0.50	4	40,000	0	0	40,000	
$1.00	3	30,000	1,000	10,000	20,000	
$1.50	2	20,000	2,000	20,000		
$2.00	1	10,000	3,000	30,000		20,000
$2.50	0	0	4,000	40,000		40,000



Drawing Tip
Draw the demand curve using the data above.



Drawing Tips
1) *Draw the supply curve using the data above*
2) *Make sure that it crosses at $1.50 and 20.*



Drawing Tip
Label the equilibrium

ALL ABOUT DEMAND

The Law of Demand

- The relationship between price and quantity demanded is a negative or inverse one.

Teaching Tip
Offer that the "LAW" is not really a law but an observation that almost always holds. In this way it is similar to Chemistry's Ideal Gas Law PV=nRT .

Why Does the Law of Demand Make Sense?

- **The Substitution Effect**
  - moves people toward the good that is now cheaper or away from the good that is now more expensive
- **The Real Balances Effect**
  - When a price increases it decreases your buying power causing you to buy less.
- **The Law of Diminishing Marginal Utility**
  - The amount of additional happiness that you get from an additional unit of consumption falls with each additional unit.

Teaching Tips

1) ***Let students discuss*** *their favorite brand of a product and have them discuss what they do when that particular brand experiences a price increase. Though you may prefer to stay away from alcohol references, I use beer as my specific example because I like Guinness but substituted to Sam Adams when the price reached $10 a six pack.*
2) *Use an example of food or drink (again I use beer) where the first unit on consumption increases happiness a great deal but the fourth, fifth or tenth, increases happiness a trivial amount.*
3) *You may, or may not want to acknowledge that this concept requires a notion of cardinal utility that economists do not favor. If you do, you can also encourage them to become majors to learn why the assumption is wrong but the conclusions are not.*
4) ***Let students discuss*** *the "Law" by offering examples from their experience.*

ALL ABOUT SUPPLY

The Law of Supply

- **The Law of Supply** is the statement that there is a positive relationship between price and quantity supplied.

Why Does the Law of Supply Make Sense?

- Because of **Increasing Marginal Costs** firms require higher prices to produce more output.

Teaching Tip

1) *You may chose to use the "believe me, it works this way" approach to avoid the whole explanation of Marginal Cost and Marginal Revenue that follows. You can simply say we'll prove it in Chapters 5 and 6.*
2) *If you go forward with the explanation do not try to teach all of Chapters 5 and 6 right here. Just get to the punch line that marginal cost is increasing.*

DETERMINANTS OF DEMAND

- Taste
- Income
  - Normal Goods
  - Inferior Goods
- Price of Other Goods
  - Complement
  - Substitute
- Population of Potential Buyers
- Expected Price
- Excise Taxes
- Subsides

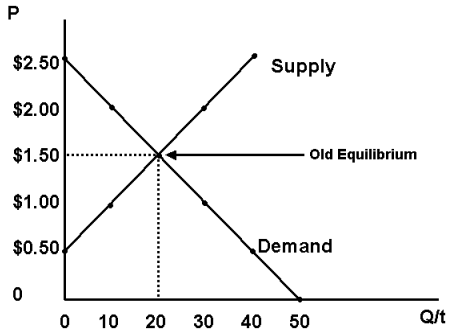
Table 2.4
Movements in the Demand Curve: Increases in the values of the determinants

An increase in	causes Demand to	causes the Demand Curve to move to the	and is shown below in Figure....
Taste	increase	right	2.4
Income, Normal Good	increase	right	2.4
Income, Inferior Good	decrease	left	2.5
Price of Other Goods, Complement	decrease	left	2.5
Price of Other Goods, Substitute	increase	right	2.4
Population	increase	right	2.4
Expected Future Price	increase	right	2.4
Excise Tax	decrease	left	2.5
Subsidy	increase	right	2.4

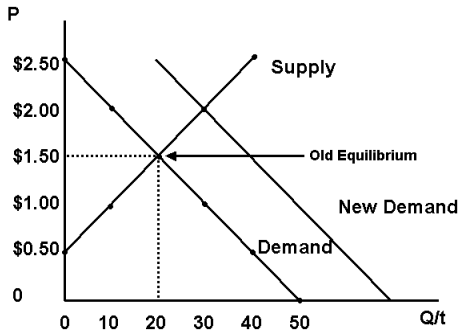
Table 2.5
Movements in the Demand Curve: Decreases in the values of the determinants

An decrease in	causes Demand to	causes the Demand curve to move to the	and is shown below in Figure....
Taste	decrease	left	2.5
Income, Normal Good	decrease	left	2.5
Income, Inferior Good	increase	right	2.4
Price of Other Goods, Complement	increase	right	2.4
Price of Other Goods, Substitute	decrease	left	2.5
Population	decrease	left	2.5
Expected Future Price	decrease	left	2.5
Excise Tax	increase	right	2.4
Subsidy	decrease	increase	2.5

Teaching Tip
Emphasize that an increase in demand is a movement to the RIGHT and a decrease is a movement to the LEFT. While "Demand moves UP" is consistent with an increase in demand the same will not be true for supply. If you use the UP and DOWN labels, confusion will reign. Stick with RIGHT and LEFT.

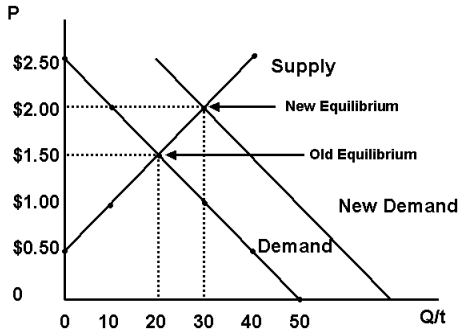


Drawing Tip
Draw a supply and demand curve using the same data as before.

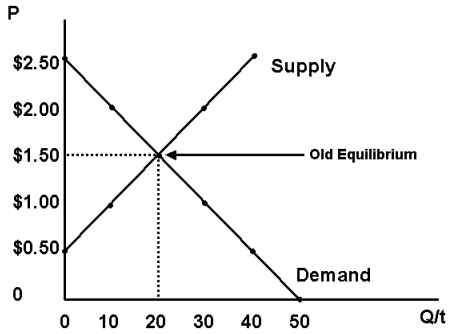


Drawing Tip
Add a new demand curve further to the right.

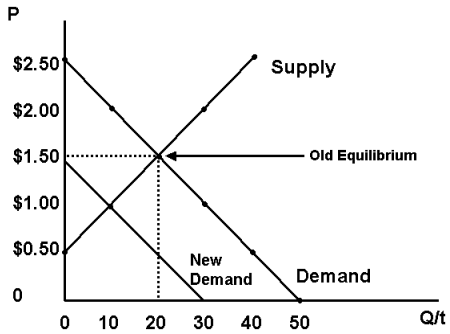
Teaching Tip
Pick an example from the table. Pick a variable and ask students to offer whether an increase or a decrease in that variable will move demand to the right.



Drawing Tip
Show the new equilibrium.

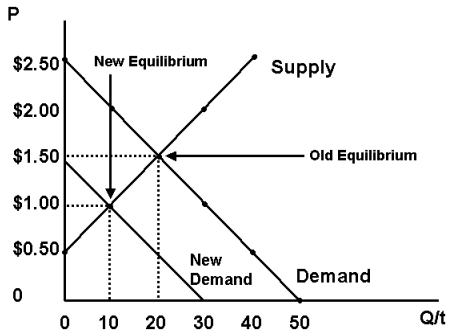


Drawing Tip
Draw a supply and demand curve using the same data as before.



Drawing Tip
Add a new demand curve further to the left.

Teaching Tip
Pick an example from the table.
Pick a variable and ask students to offer whether an increase or a decrease in that variable will move demand to the left.



Drawing Tip
Show the new equilibrium.

DETERMINANTS OF SUPPLY

- Price of Inputs
- Technology
- Price of Other Potential Output
- Number of Sellers
- Expected Price
- Excise Taxes
- Subsidies

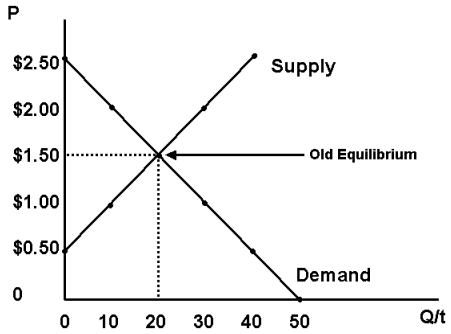
Table 2.6
Movements in the Supply Curve: Increases in the Values of the Determinants

An increase in…	causes supply to…	causes Supply Curve to move to the…	and is shown below in Figure....
Price of Inputs	decrease	left	2.7
Technology	increase	right	2.6
Price of other Potential Outputs	decrease	left	2.7
Number of Sellers	increase	right	2.6
Expected Future Price	decrease	left	2.7
Excise Tax	decrease	left	2.7
Subsidy	increase	right	2.6

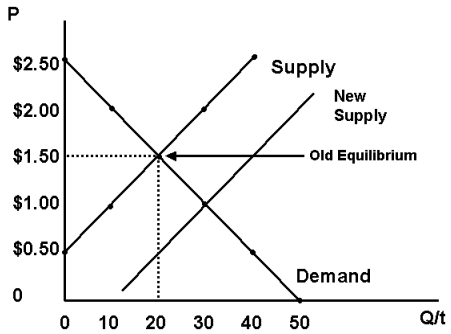
Table 2.7
Movements in the Supply Curve: Decreases in the Values of the Determinants

A decrease in..	causes Supply to…	causes the Supply curve to move to the…	and is shown below in Figure....
Price of Inputs	increase	right	2.6
Technology	decrease	left	2.7
Price of other Potential Outputs	increase	right	2.6
Number of Sellers	decrease	left	2.7
Expected Future Price	increase	right	2.6
Excise Tax	increase	right	2.6
Subsidy	decrease	left	2.7

Teaching Tip
Have student notices that, just like demand, an increase supply is a movement to the right and a decrease is a movement to the left.

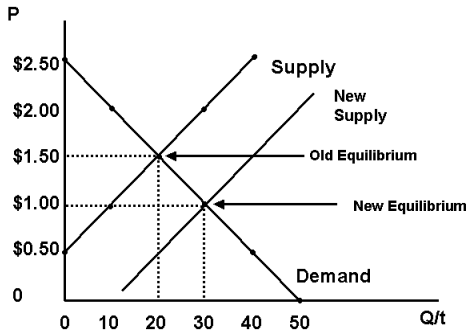


Drawing Tip
Draw a supply and demand curve using the same data as before.

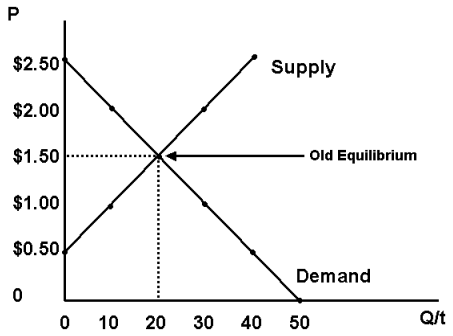


Drawing Tip
Add a new supply curve further to the right.

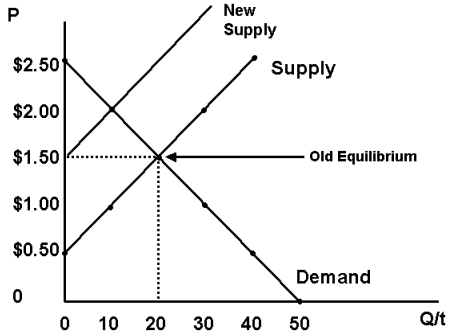
Teaching Tip
Pick an example from the table.
Pick a variable and ask students to offer whether an increase or a decrease in that variable will move supply to the right.



Drawing Tip
Show the new equilibrium.

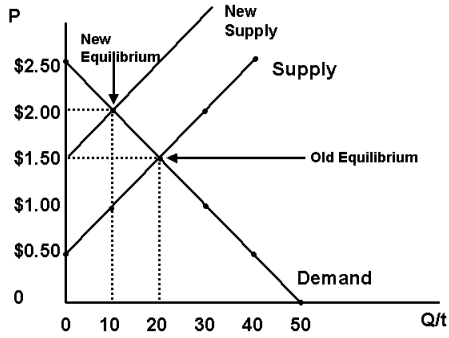


Drawing Tip
Draw a supply and demand curve using the same data as before.



Drawing Tip
Add a new supply curve further to the left.

Teaching Tip
Pick an example from the table.
Pick a variable and ask students to offer whether an increase or a decrease in that variable will move supply to the left.

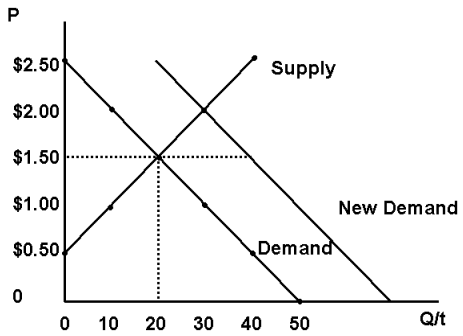


Drawing Tip
Show the new equilibrium.

KICK IT UP A NOTCH
WHY THE NEW EQUILIBRIUM?

- If there is a change in supply or demand then without a change in the price of the good, there will be a shortage or a surplus.

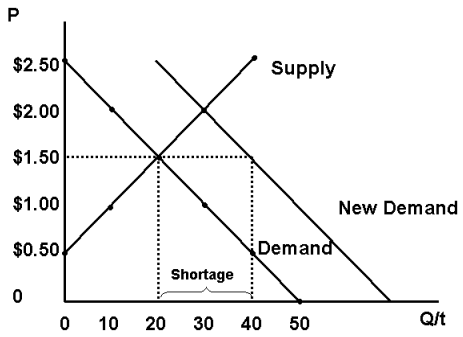
A shortage caused when there is an increase in demand and no price change



Drawing Tips

1) Draw a supply an demand diagram labeling the equilibrium price quantity combination

2) Increase demand and extend the price over to the new demand curve.



Drawing Tips

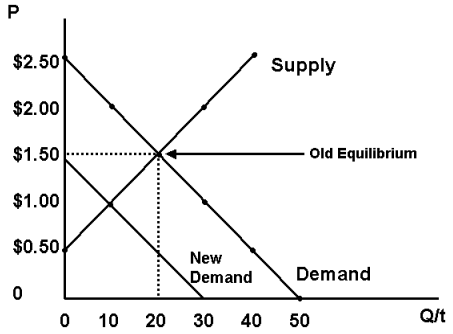
1) Come down from the point where the price line hits the new demand curve.

2) Note the shortage.

Teaching Tips

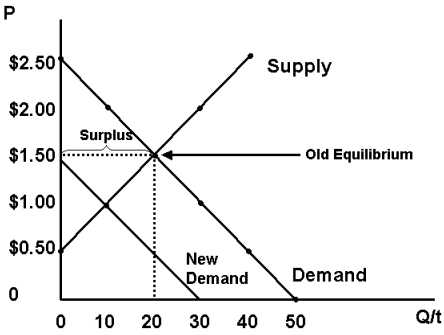
Note the new quantity demanded is 40 and the quantity supplied is only 20

A surplus caused when there is a decrease in demand and no price change



Drawing Tips

1) *Draw a supply an demand diagram labeling the equilibrium price quantity combination*
2) *Decrease demand*



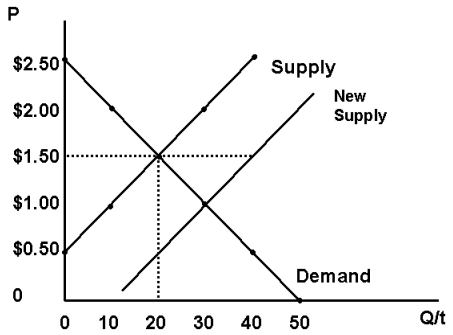
Drawing Tip

Note the surplus

Teaching Tip

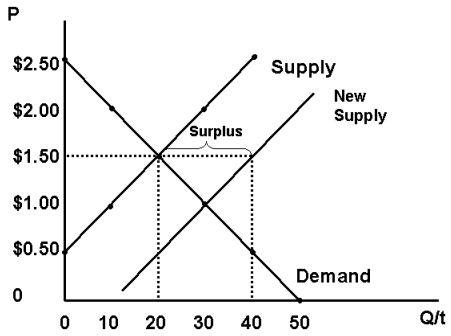
Note the new quantity supplied is 20 and the quantity demanded is 0

A surplus caused when there is an increase in supply and no price change



Drawing Tips

1) *Draw a supply an demand diagram labeling the equilibrium price quantity combination*
2) *Increase supply and extend the price over to the new supply curve.*



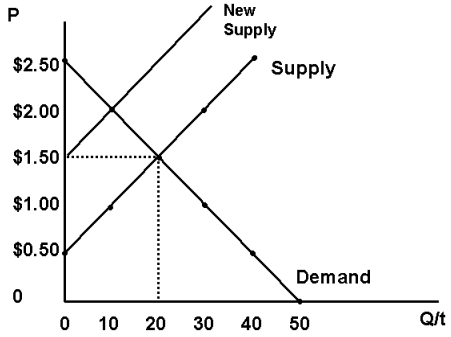
Drawing Tips

1) *Come down from the point where the price line hits the new supply curve.*
2) *Note the surplus.*

Teaching Tips

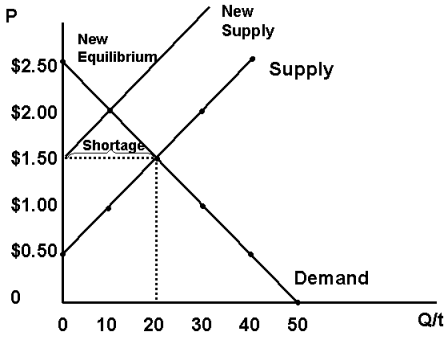
Note the new quantity supplied is 40 and the quantity demanded is only 20

A shortage caused when there is a decrease in supply and no price change



Drawing Tips

1) *Draw a supply an demand diagram labeling the equilibrium price quantity combination*
2) *Decrease supply*



Drawing Tip

Note the shortage

Teaching Tip

Note the new quantity supplied is 0 and the quantity demanded is 20

End of Chapter Questions

1. The supply and demand model examines the how prices and quantities are determined
   a) in markets.
   b) by governments.
   c) by churches.
   d) by monopolists.

2. A change in the price of eggs will impact
   a) the demand for eggs.
   b) the supply of eggs.
   c) the quantity demanded and the quantity supplied of eggs but neither demand nor supply.
   d) both the supply and demand for eggs.

3. When an economics student draws a supply and demand diagram to model an increase in the income, she is assuming this change happens
   a) semper fidelis.
   b) ceteris paribus.
   c) ipso facto.
   d) defacto.

4. If the supply and demand curves cross at a price of $2, at any price above that there will be
   a) an equilibrium.
   b) a surplus.
   c) a shortage.
   d) a crisis.

5. If the supply and demand curves cross at a quantity of 100, then the price necessary to get firms to sell more than that will have to be _____ equilibrium.
   a) above
   b) at
   c) below
   d) within 10% either way of

6. An increase in which of the following determinants of demand will have an ambiguous (uncertain) effect on price?
   a) Taste
   b) Price of a complement
   c) Income
   d) Price of a substitute

7. Which of the following will impact both supply and demand?
   a) A change in price
   b) A change in quantity
   c) A change in expected future price
   d) A change in income

8. An increase in the income of consumers will cause the
   a) supply of all goods to rise.
   b) demand for all goods to rise.
   c) supply of all goods to fall.
   d) the demand for some goods to rise and for others to fall.

9. Without an increase in price, an increase in demand will lead to
   a) a shortage.
   b) a surplus.
   c) socialism.
   d) equilibrium.

10. The underlying reason for the upward sloping nature of the supply curve is that
   a) the production of most goods comes with increasing marginal benefits.
   b) the production of most goods comes with increasing marginal costs.
   c) the consumption of most goods comes with decreasing marginal utility.
   d) the consumption of most goods comes with increasing marginal utility.

11. If Midwestern grain farmers can plant either soybeans or corn on their land with equal profitability and there is an increase in the price of soybeans, which of the following will result?
   a) A movement to the right in the demand for corn.
   b) A movement to the left in the demand for corn.
   c) A movement to the right in the supply of corn.
   d) A movement to the left in the supply of corn.

12. Part of the Patient Protection and Affordable Care Act involved a tax on indoor tanning that tanning salons are required to collect from tanners and send to the federal government. Which of the following would be the predicted result?
   a) A movement to the right in the demand for tanning.
   b) A movement to the left in the demand for tanning.
   c) A movement to the right in the supply of tanning.
   d) A movement to the left in the supply of tanning.

13. As the baby boom (born between 1946 and 1964) ages, which of the following is a likely outcome?

a) A movement to the right in the demand for nursing home beds.
b) A movement to the left in the demand for nursing home beds.
c) A movement to the right in the supply of nursing home beds.
d) A movement to the left in the supply of nursing home beds.

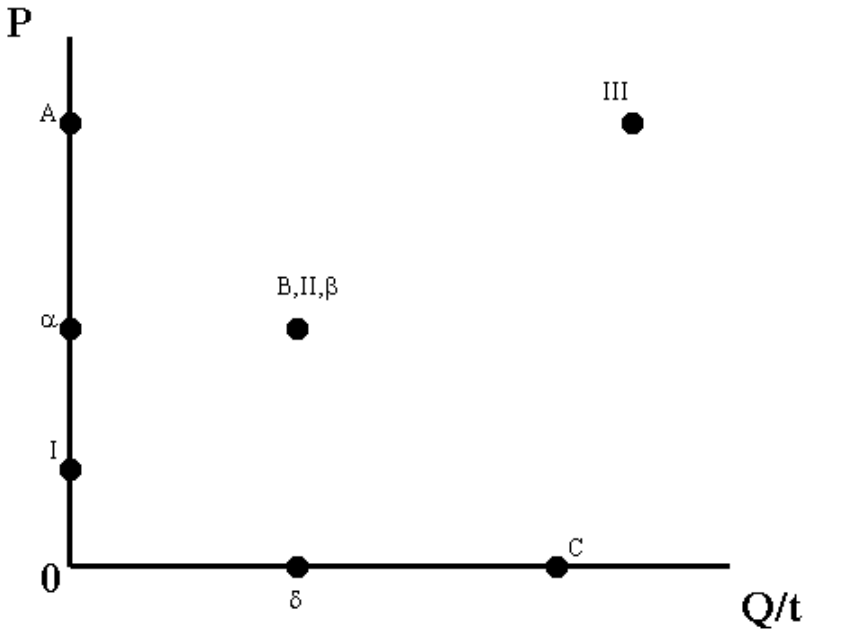
Think About This

Using simple supply and demand analysis, think about the system of allocating human kidneys. The law that forbids the same of human organs, but allows their voluntary donation, means that there is a bigger shortage of kidneys than there otherwise would be. Does this fact alter your view of the law forbidding the sale of human organs? How about blood?

Talk About This

Are markets always right? List some markets that you think get the production or price of a good wrong. What do these goods have in common?

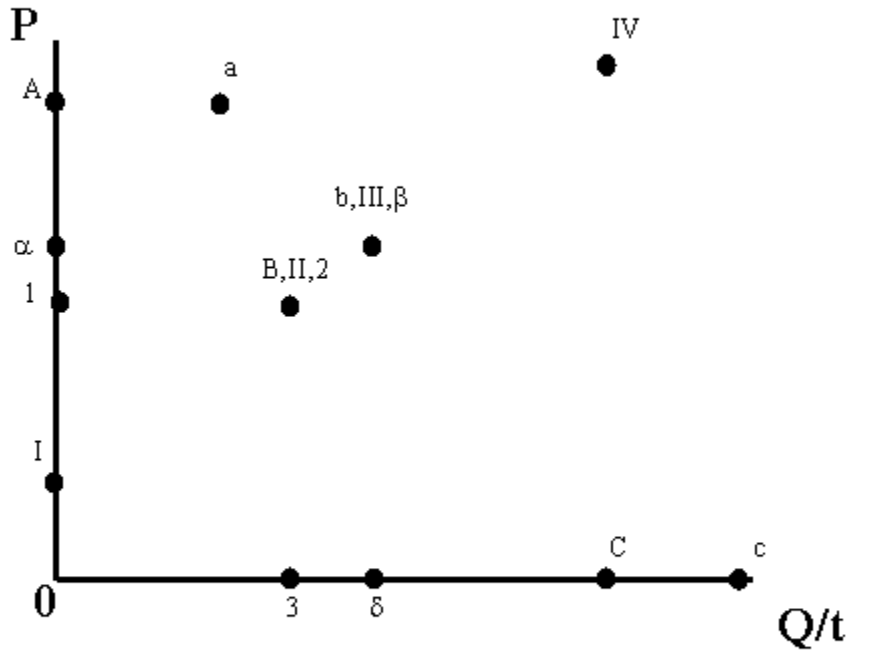
Dot-to-Dots
Basic Supply and Demand



Connect A,B,C to get the demand curve; Connect I,II,III to get the supply curve; Connect α,β,δ.

α Represents the equilibrium price; δ represents the equilibrium quantity; B,II,β represents the equilibrium point where supply and demand are equal.

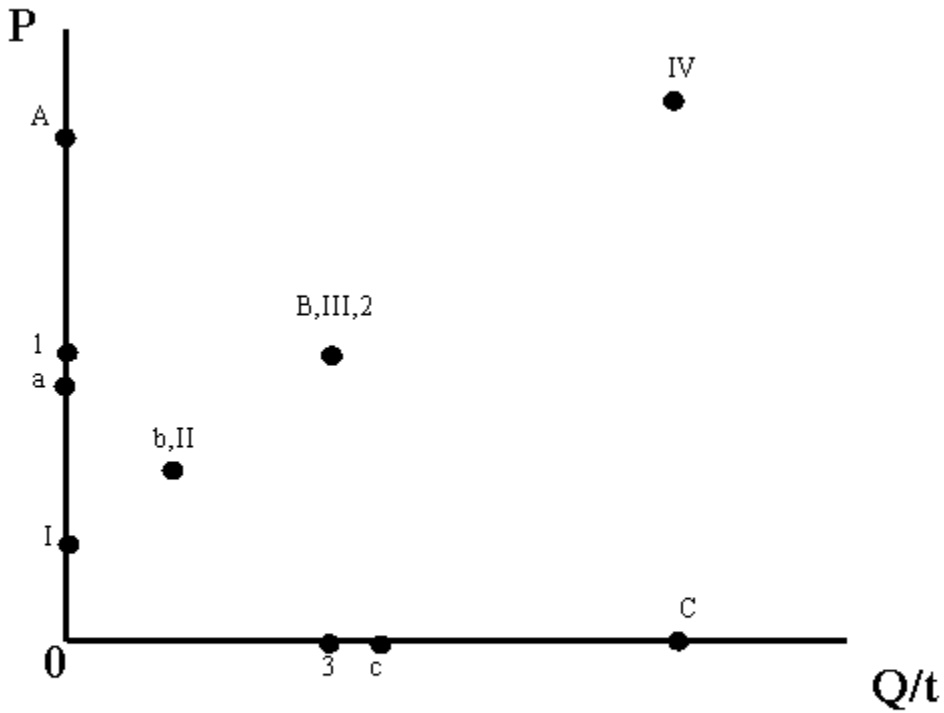
Supply and Demand; Demand shifts right



Connect A,B,C to get the original demand curve; Connect a,b,c to get the new demand curve; Connect I-IV to get the supply curve; Connect α,β,δ; Connect 1,2,3.

1 represents the original equilibrium price; α represents the new equilibrium price; 3 represents the original equilibrium quantity; δ represents the new equilibrium quantity; B,II,2 represents the original equilibrium point where supply equals demand; b,III,β represents the new equilibrium point where supply equals demand.

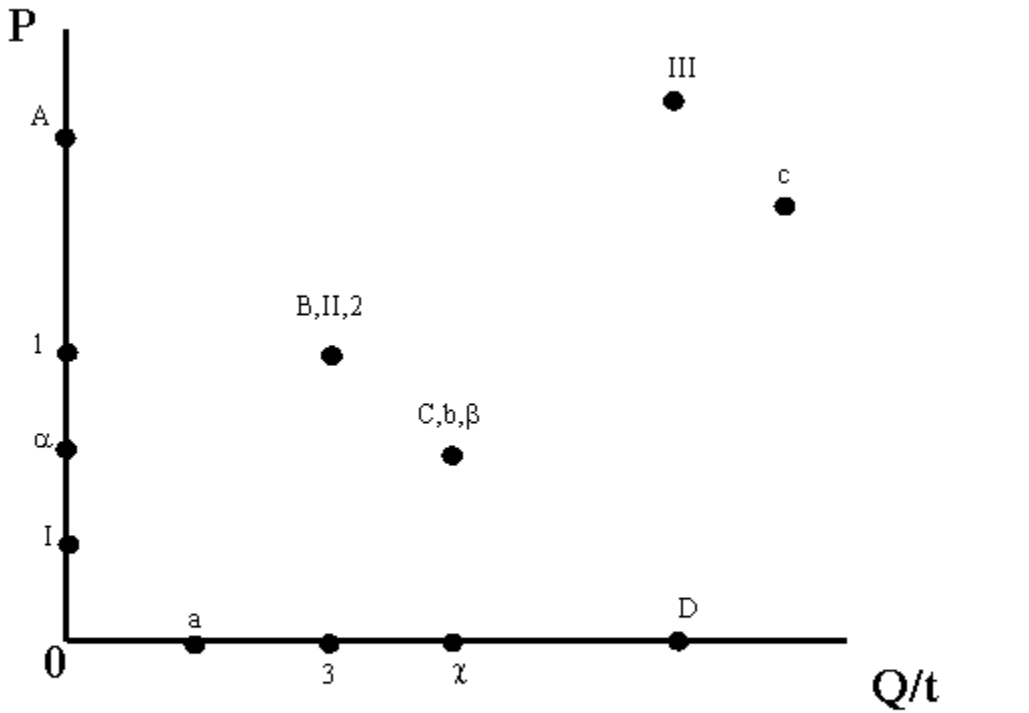
Supply and Demand; Demand shifts left



Connect A,B,C to get the original demand curve; Connect a,b,c to get the new demand curve; Connect I-IV to get the supply curve; Connect 1,2,3.

1 represents the original equilibrium price; a represents the new equilibrium price; 3 represents the original equilibrium quantity; c represents the new equilibrium quantity; B,III,2 represents the original equilibrium point where demand equals supply; b,II represents the new equilibrium point where demand equals supply.

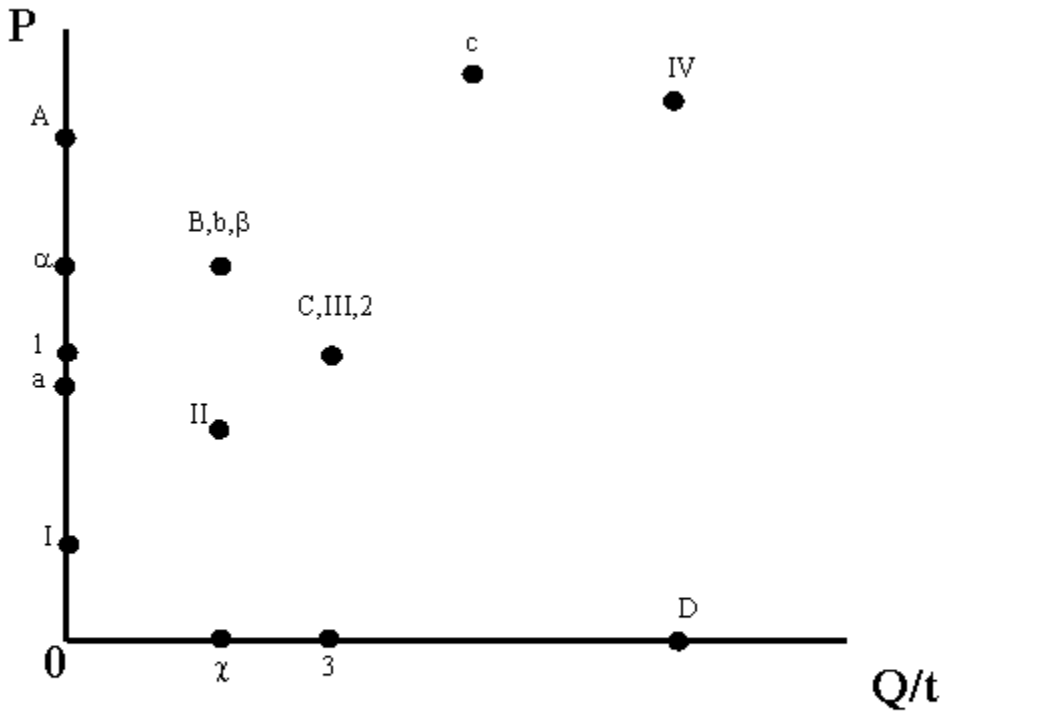
Supply and Demand; Supply shifts right



Connect A,B,C,D to get the demand curve; Connect I,II,III to get the original supply curve; Connect a,b,c to get the new supply curve; Connect 1,2,3; Connect α,β,χ.

1 represents the original equilibrium price; α represents the new equilibrium price; 3 represents the original equilibrium quantity; χ represents the new equilibrium quantity; B,II,2 represents the original equilibrium point where demand equals supply; C,b,β represents the new equilibrium point where demand equals supply.

Supply and Demand; Supply shifts left



Connect A,B,C,D to get the demand curve; Connect I,II,III,IV to get the original supply curve; Connect a,b,c to get the new supply curve; Connect 1,2,3; Connect α,β,χ.

1 represents the original equilibrium price; α represents the new equilibrium price; 3 represents the original equilibrium quantity; χ represents the new equilibrium quantity; C,III,2 represents the original equilibrium point where demand equals supply; B,b,β represents the new equilibrium point where demand equals supply.