LECTURE NOTE 02

DEMAND, SUPPLY AND MARKET EQUILIBRIUM

Outline of today's lecture:

I. Decision Making Units

There are **two basic decision making units** in a market system:

- **Firms** (*primary producing* units in an economy)
- **Households** (*primary consuming* units in an economy)

A firm An organization that transforms resources (inputs) into products (outputs). Firms are the primary producing units in a market economy.

> **An entepreneur** is one *who organizes, manages and assumes the risks of a firm, taking a new idea or a new product and turning it into a successful business.*

Household is all of the people *who live under one roof and who make joint financial decisions.* The consuming units in an economy are households.

II. Circular Flow

Households and *firms* <u>*interact*</u> in

- **Output (or product) markets**: markets in which goods and services are exchanged.
  - *In output markets, firms supply* and households demand
- **Input (or factor) markets**: markets in which the resources used to produce products are exchanged..
  - *In input markets, households supply* and firms demand

Input (Factor) Markets:

1. *Labor Market:* Input market in which the *households* ***supply work*** <u>*for wages*</u> to *firms that demand labor*.

2. *Capital Market:* Input market in which households **supply their savings**, <u>*for interest or for claims to future profits*</u>, to *firms that demand funds to buy capital goods*.

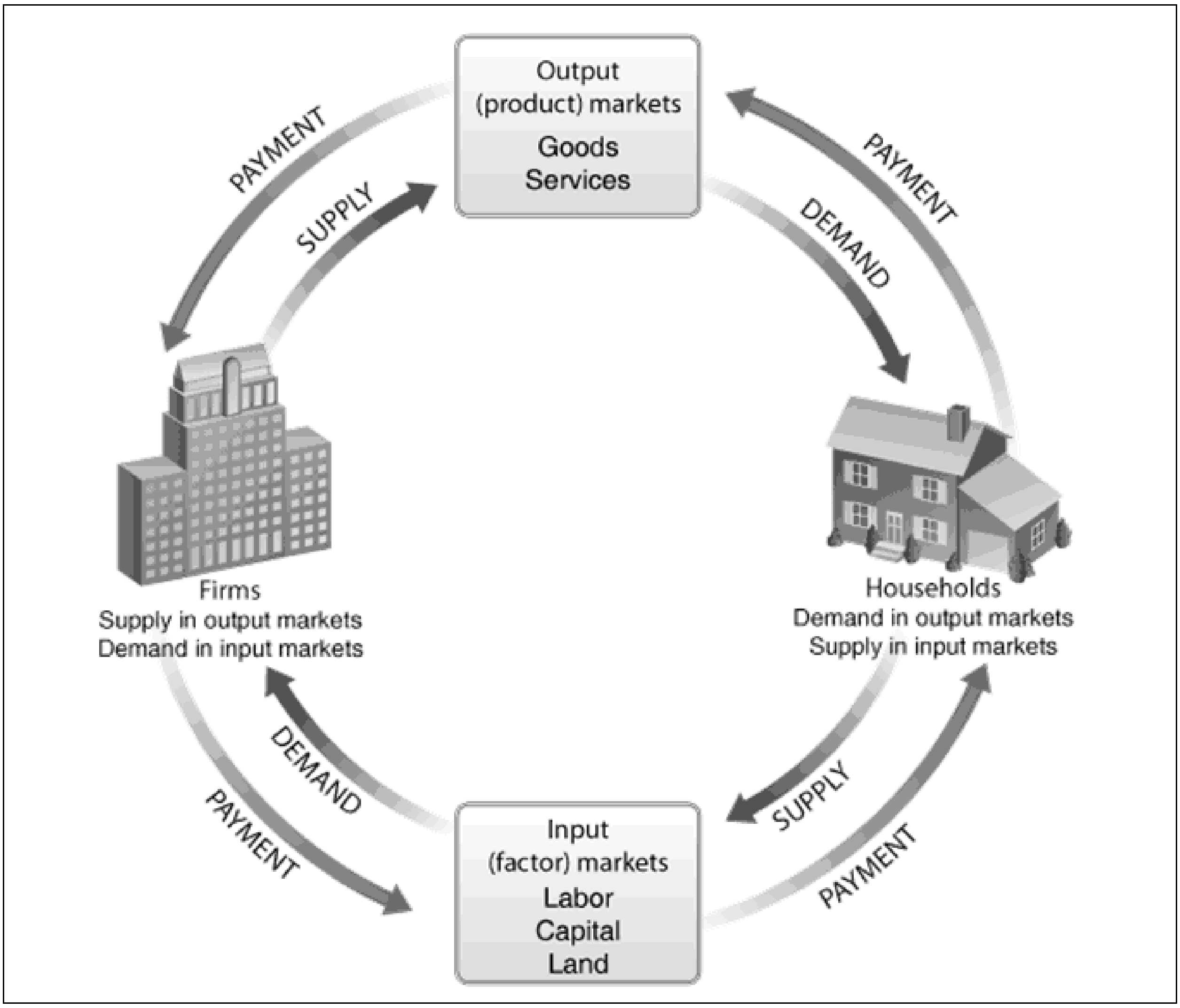
3. *Land Market:* Input market in which households **supply land or other real property** to *firms* in exchange <u>*for rent*</u>.

Factors of Production:

a. Land,
b. Labor, and
c. Capital

are the *three key* factors of production.

Now let us draw the *Circular Flow diagram* of an economy:



In the circular flow diagram:

- Goods and services flow clockwise:
    - Labor services supplied by HH flows to firms.
    - Goods and services produced by Firms flow to HH.
- Payment (usually money) flows *counter*clockwise:
    - Payment for goods and services flows from HH to Firms.
    - Payment for labor services flows from Firms to HH.

Hence, we see that:

- Input and Output Markets *are connected* through the *behaviour* of both *Firms and Households*.

III. Demand in Output Markets

A household's decision about what quantity of a particular output to demand depends on

- *<u>Price of the product</u>* in question – X1
- *<u>Prices of other related</u>* (substitutes & complements) products – X2
- *<u>Income available</u>* to the household –X3
- Household's *<u>tastes and preferences</u>* *–X4*
- Household's amount of *<u>accumulated wealth</u>* *–X5*
- Household's *<u>expectations</u>* about *future income, wealth & prices-X6*

Or mathematically, quantity demanded (Q^d) is as follows;

$$Q^d = f(X1, X2, X3, X4, X5, X6)$$

Quantity demanded: Amount of a product that a household is *willing* and *able to buy* at a given price (in a given period of time).

Demand: Relationship between quantity demanded and price.

Changes in *Quantity Demanded* vs Changes In *Demand*

- *Changes in own price* <u>affect</u> *the quantity demanded* per period.
- *Changes in income, wealth, other prices, tastes, or expectations* <u>affect</u> *demand*.

Demand schedule: A table showing how much of a given product a household would be willing to buy at different prices.

Demand curve: A graph illustrating how much of a given product a household would be willing to buy at different prices.

TABLE 3.1 Anna's Demand Schedule for Telephone Calls

PRICE (PER CALL)	QUANTITY DEMANDED (CALLS PER MONTH)
$ 0	30
.50	25
3.50	7
7.00	3
10.00	1
15.00	0

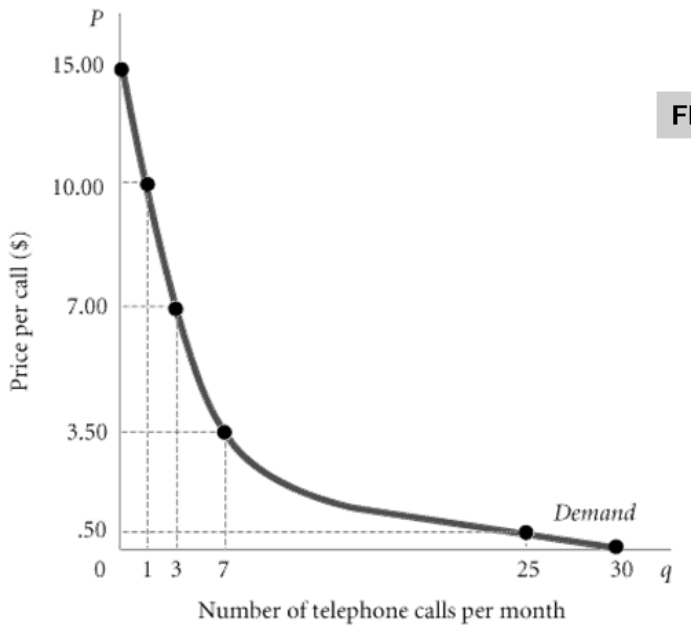


FIGURE 3.2 Anna's Demand Curve

Demand Curves Slope Downward:

- There is a negative relationship between price and quantity demanded:
    - As price rises, quantity demanded decreases.
    - As price falls, quantity demanded increases.

- This is called the "***Law of Demand***" in Economics

Two additional things are notable

- Demand curves intersect the price (Y-) axis, a result of limited incomes and wealth.

- Demand curves intersect the quantity (X-) axis, a result of time limitations and *diminishing marginal utility*.
    - *diminishing marginal utility*: Each successive unit of a good worth less to me.
        - Utility I get from the second ice cream is likely to be les than the utility I get from the first one.

Shift of Demand Versus Movement Along A Demand Curve

- A change in **demand** is not the same as a change in **quantity demanded**.
    - A higher price causes lower **quantity demanded** and a move along the demand curve D_A. *(Movement along the curve)*
    - Changes in determinants of demand, other than price, cause a change in **demand**, or a **shift** of the entire demand curve, from D_A to D_B. *(Change in Demand)*

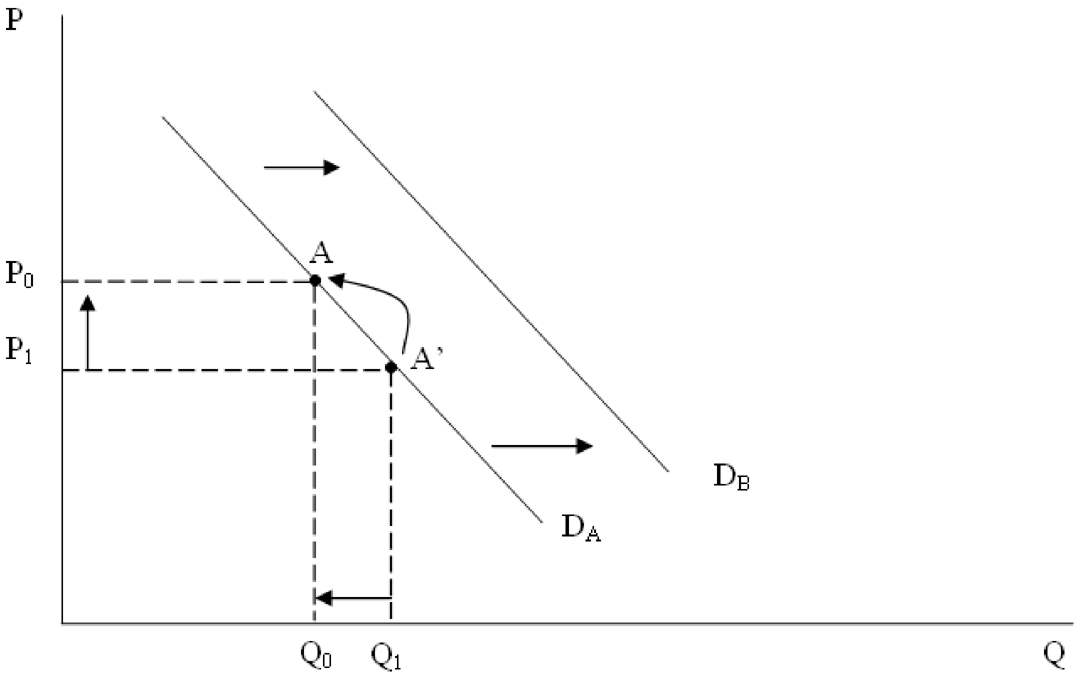


TABLE 3.2 Shift of Anna's Demand Schedule Due to increase in Income

Price (Per Call)	SCHEDULE D_0 Quantity Demanded (Calls Per Month at an Income of $300 Per Month)	SCHEDULE D_1 Quantity Demanded (Calls Per Month at an Income of $600 Per Month)
$ 0	30	35
.50	25	33
3.50	7	18
7.00	3	12
10.00	1	7
15.00	0	2
20.00	0	0

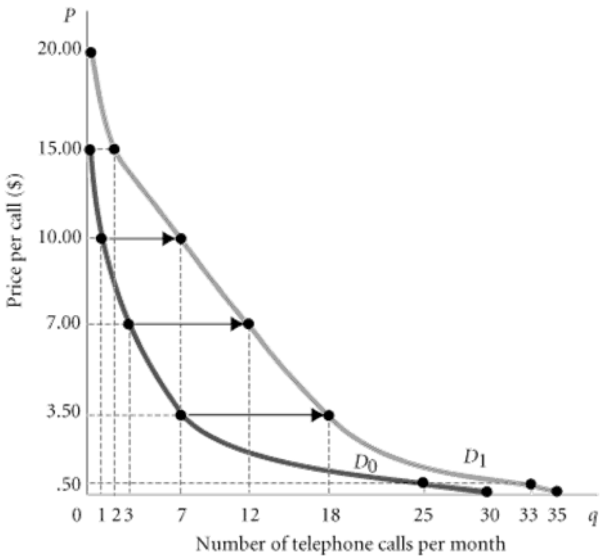


FIGURE 3.3 Shift of a Demand Curve Following a Rise in Income

<u>Other determinants of household demand</u>

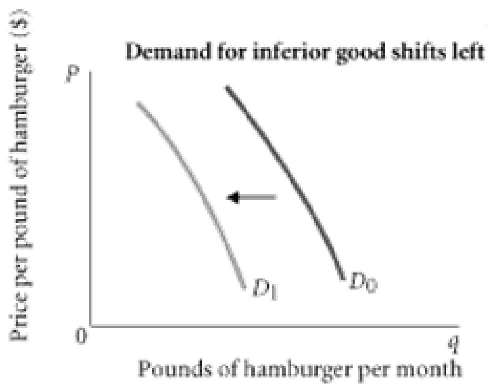
1. Income and Wealth

- ***Income:*** Sum of all a household's wages, salaries, profits, interest payments, rents, and other forms of earnings in a given period of time.
    - It is a flow measure.

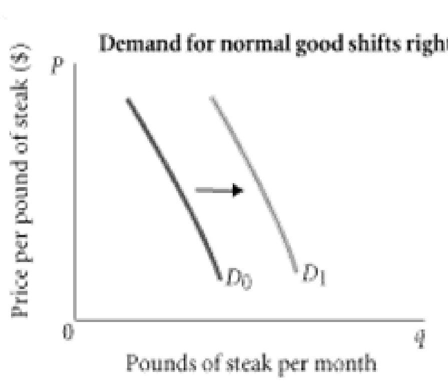
- ***Wealth:*** Total value of what a household owns minus what it owes.
    - It is a stock measure.

Normal goods: Goods for which demand increases when income increases and for which demand falls when income falls.

Inferior goods: Goods for which demand falls when income rises.



Higher income decreases the demand for an inferior good



Higher income increases the demand for a normal good

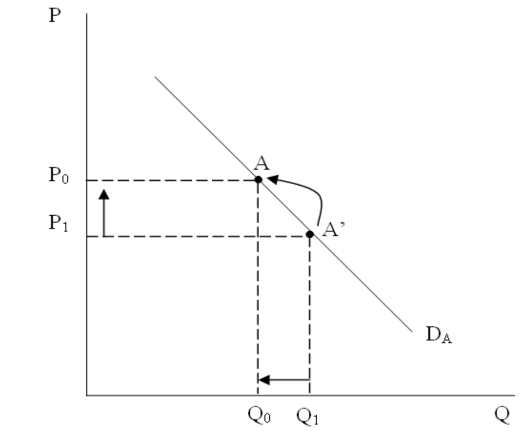
2. Prices of Other Goods and Services

Substitutes: Goods that can serve as replacements for one another: when the price of one increases, demand for the other increases.

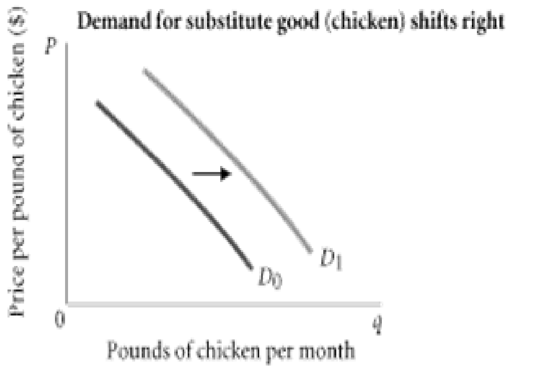
- ***Perfect substitutes:*** Identical products.

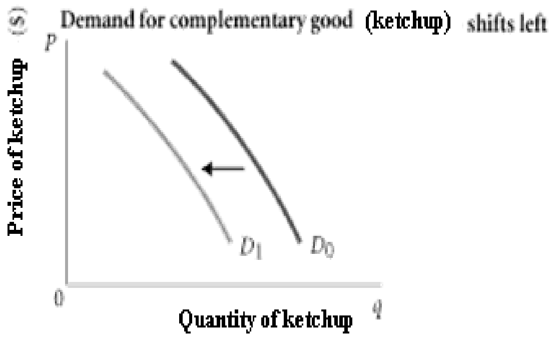
Complements, complementary goods: Goods that “go together”:

- a decrease in the price of one causes an increase in demand for the other, and vice versa.



- Price of hamburger rises
- Quantity of hamburger demanded per month falls
- Demand for substitute good (chicken) shifts right
- Demand for complement good (ketchup) shifts left





3. Tastes and Preferences

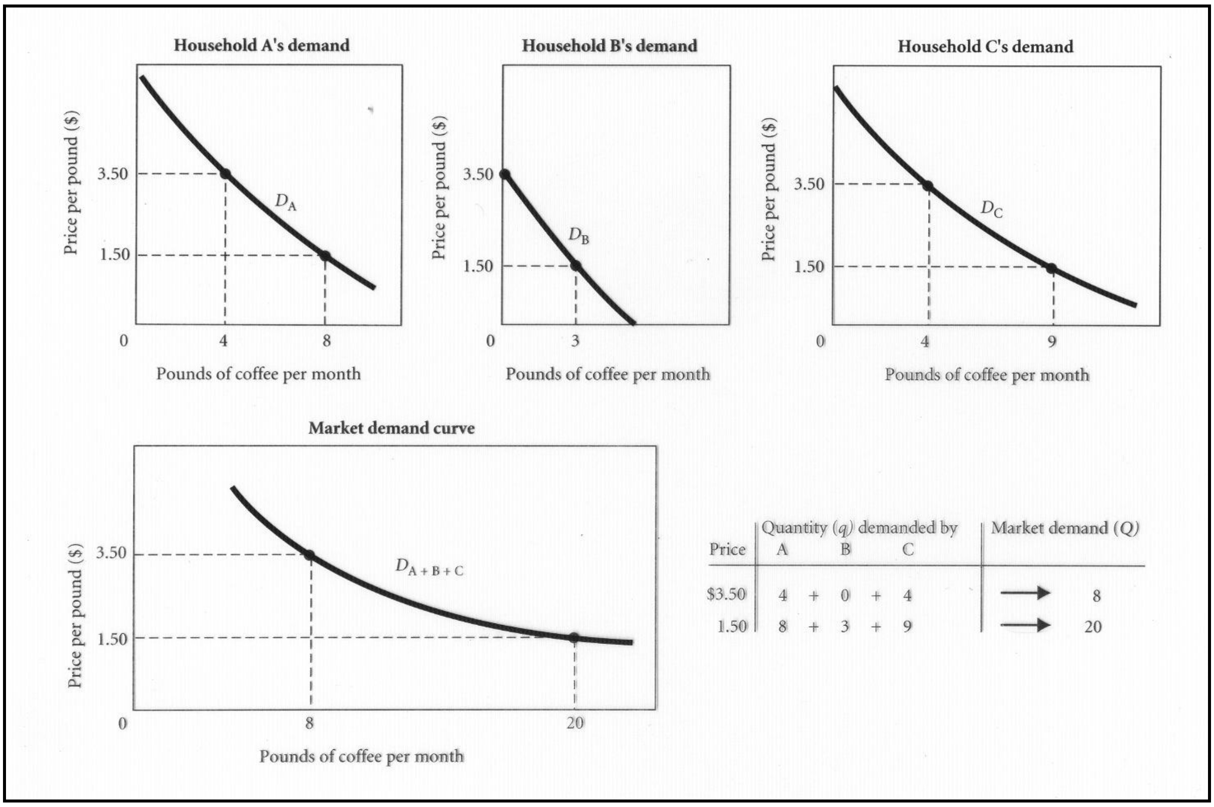
- Diverse

4. Expectations

<u>From Household Demand to Market Demand</u>

- Market demand is the sum of all the quantities of a good or service demanded per period by all the households buying in the market for that good or service.

- Assuming there are only three households in the market, market demand is derived as follows:



IV. Supply in Output Markets

- Supply decisions depend on profit potential.
- Profit is the difference between revenues and costs.

- Factors that affect supply
  - Price of the good (X1)
  - Prices of related products (X2)
  - Cost of Production which depends on (X3)
    - Prices of inputs (land, labor, capital), and
    - Technology of production
      - Regardless of the price that a firm can command for its product, revenue must exceed the cost of producing the output for the firm to make a profit.

- Mathematically;

$$Q^s = g(X1, X2, X3)$$

Quantity supplied: The amount of a particular product that a firm would be willing and able to offer for sale at a particular price during a given time period.

Supply schedule: A table showing how much of a product firms will sell at different prices.

Supply curve: A graph illustrating how much of a product a firm will sell at different prices.

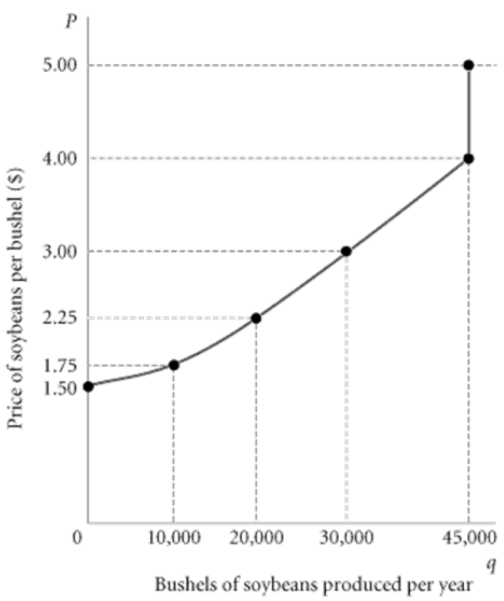
Law of supply :

- An increase in market price will lead to
  - an increase in quantity supplied, and
- a decrease in market price will lead to
  - a decrease in quantity supplied.

TABLE 3.3 Clarence Brown's Supply Schedule for Soybeans

PRICE (PER BUSHEL)	QUANTITY SUPPLIED (BUSHELS PER MONTH)
$1.50	0
1.75	10,000
2.25	20,000
3.00	30,000
4.00	45,000
5.00	45,000

FIGURE 3.6 Clarence Brown's Individual Supply Curve



- A producer will supply more when the price of output is higher.
- Slope of supply curve is positive

Shift of Supply Versus Movement Along a Supply Curve

As with demand, it is very important to distinguish between movements along supply curves (changes in quantity supplied) and shifts in supply curves (changes in supply):

Movement along a supply curve: Change in quantity supplied brought about by a change in price.

- Change in price of a good or service leads to
    - Change in quantity supplied (movement along a supply curve).

Shift of a supply curve Change that takes place in a supply curve corresponding to a new relationship between quantity supplied of a good and the price of that good. The shift is brought about by a change in the original conditions.

- Change in costs, input prices, tehcnology or prices of related goods and services leads to
    - Change in supply (shift of a supply curve).

TABLE 3.4 Shift of Supply Schedule for Soybeans Following Development of a New Disease-Resistant Seed Strain

	SCHEDULE D_0	SCHEDULE D_1
Price (Per Bushel)	Quantity Supplied (Bushels Per Year Using Old Seed)	Quantity Supplied (Bushels Per Year Using New Seed)
$1.50	0	5,000
1.75	10,000	23,000
2.25	20,000	33,000
3.00	30,000	40,000
4.00	45,000	54,000
5.00	45,000	54,000

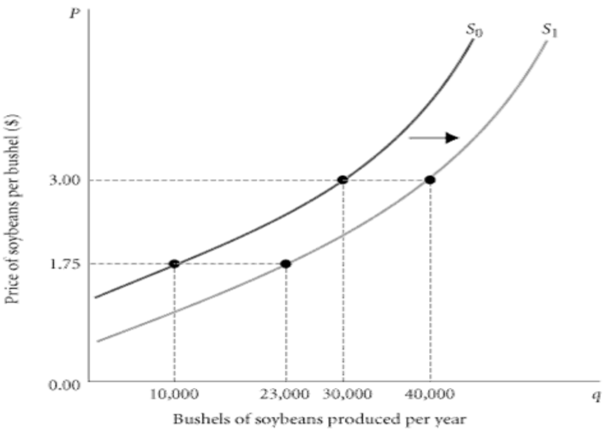


FIGURE 3.7 Shift of Supply Curve for Soybeans Following Development of a New Seed Strain

From Individual Supply to Market Supply

Market supply: Sum of all that is supplied each period by all producers of a single product.

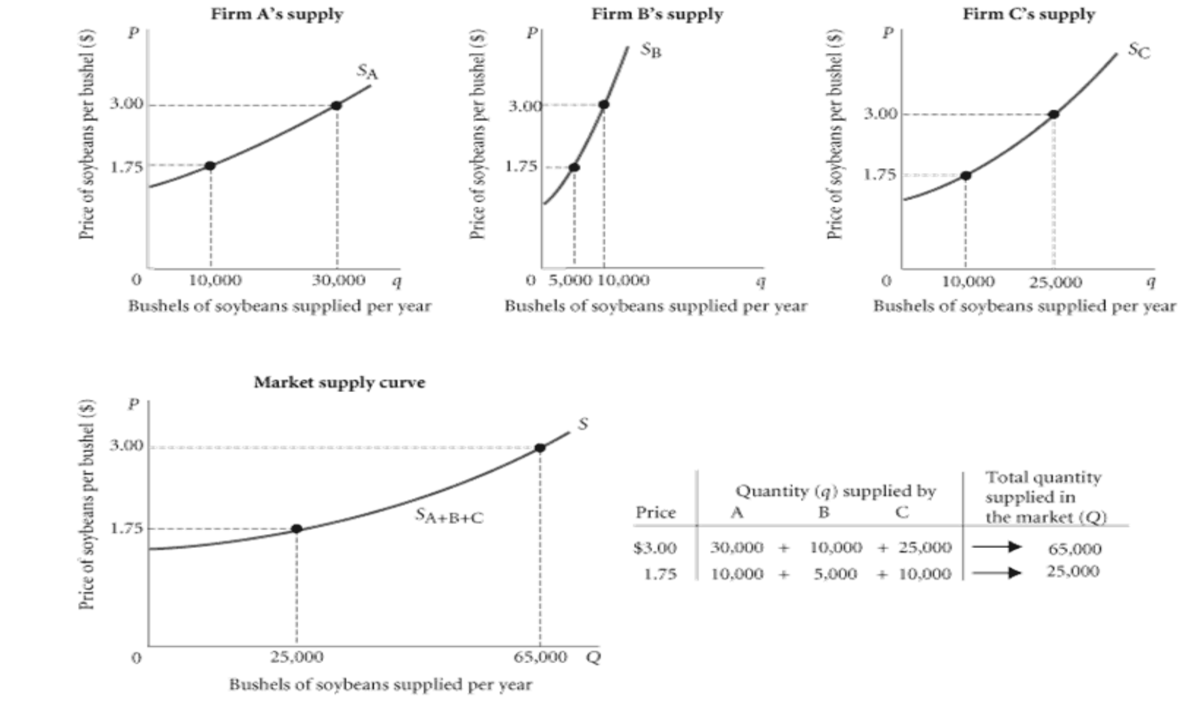


FIGURE 3.8 Deriving Market Supply from Individual Firm Supply Curves

V. Market Equilibrium

Equilibrium

- Condition that exists when quantity supplied and quantity demanded are equal.

- At equilibrium, there is no tendency for price to change.

Excess demand (shortage)

- Condition that exists when quantity demanded exceeds quantity supplied at the current price.

- Bidding at an auction starts with excess demand and ends up with quantity demanded and quantity supplied equal.

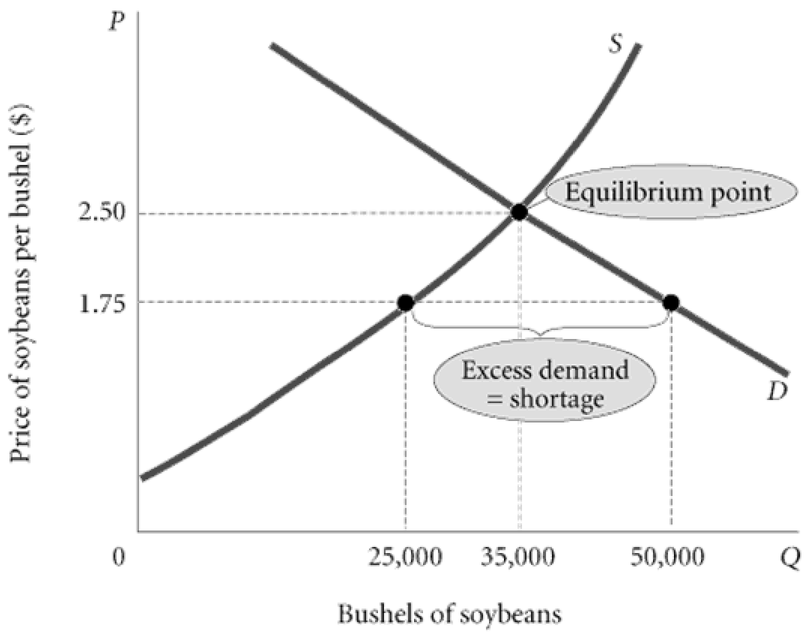


FIGURE 3.9 Excess Demand, or Shortage

- When quantity demanded exceeds quantity supplied, price tends to rise.
  - When the price in a market rises, quantity demanded falls and quantity supplied rises
    - until an equilibrium is reached at which quantity demanded and quantity supplied are equal.

Excess supply (surplus)

- Condition that exists when quantity supplied exceeds quantity demanded at the current price.

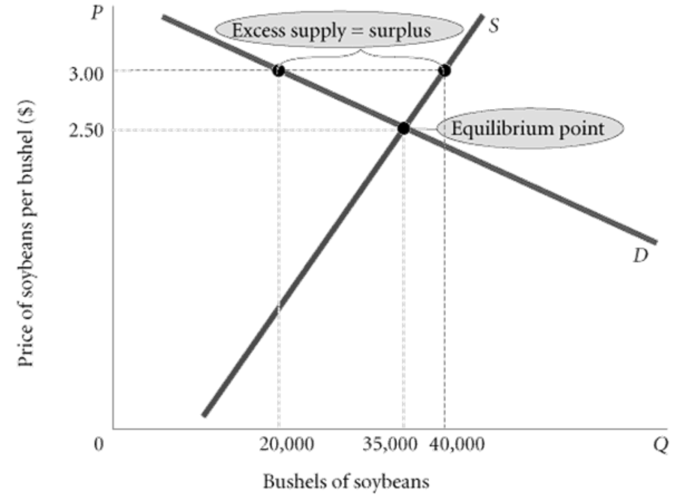


FIGURE 3.10 Excess Supply, or Surplus

- When quantity supplied exceeds quantity demanded at the current price, the price tends to fall.
    - When price falls, quantity supplied is likely to decrease and quantity demanded is likely to increase
        - until an equilibrium price is reached where quantity supplied and quantity demanded are equal.

Changes in Equilibrium

- When supply and demand curves shift, the equilibrium price and quantity change.

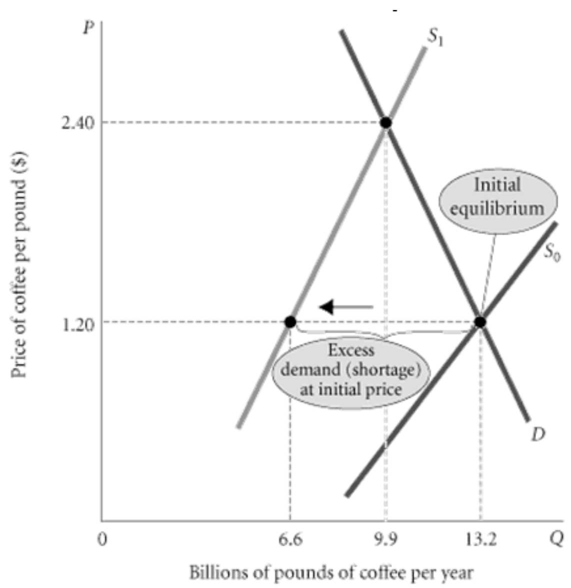


FIGURE 3.11 The Coffee Market: A Shift of Supply and Subsequent Price Adjustment

Examples of Supply and Demand Shifts for Product X