Econ 1A. Handout: Chapter 4. Market: Demand (DD) and Supply (SS).

1. Economics is about the choices that people make to cope with scarcity ⇒ These choices are guided by **Benefit** and **Cost**, and are coordinated through Goods and Factors of Production (Resources) Markets. ⇒ To understand how markets work, we study Demand (DD) and Supply (SS) and explain how *Prices* are determined and make prediction about *prices change*.
2. **Market**: Any arrangement that brings *buyers* (demanders) and *sellers* (suppliers) together and enables them to get information, make rational decision, and do business together.
3. **Competitive Market**: A market has so many buyers and sellers that no single buyer or seller can influence the price.

The behavior of buyers (DD)
Individual demand (dd)

4. *Demand* (dd): The *negative* relationship between quantity demanded (q_d) and price (p) when *all other influences on buying plans* (i.e., prices of related goods, incomes, expected future prices, number of buyers, preferences) remain the same during a given time period.

5. dd can be specified as:

$$q_d = f(p;\ p',\ exp,\ I,\ exI,\ n,\ t),$$

where q_d = quantity demanded, p = price, p' = the prices of related goods, exp = expected future prices, I = income, exI = expected income and credit, n = number of buyers, t = preferences.

6. **Quantity demanded (q_d)**: the amount of any good, service, or resource that people are willing and able to buy during a specified period at a specified price, i.e., *one quantity at one price*.
7. **Demand (dd)** is *a list of quantities at different prices* illustrated by **a demand schedule** and **a demand curve**.

Market Demand (DD): the sum of the demands of all buyers in the market.

8. Demand (DD) can be specified as

$$Q_d = f(p;\ p',\ exp,\ I,\ exI,\ n,\ t),$$

where Q_d = quantity demanded, p = price, p' = the prices of related goods, exp = expected future prices, I = income, exI = expected income and credit, n = number of buyers, t = preferences.

9. **Assumptions**

(1) **The law of demand**: other things remaining the same, the higher the price of a good, the smaller is the quantity demanded, i.e., the relationship between p and Q_d is negative and the demand curve is downward sloping.

(2) **Other influences (things)** remain the same.

(a) the prices of related goods (p'); (b) expected future prices (exp) (c) income (I); (d) expected future income and credit (exI); (e) number of buyers (n); (e) preferences (t).

10. **Change in Q_d (quantity demanded) vs Change in DD (demand)**

(1) When the price of the good changes and other influences on buying plans do not change, there is *a movement along the demand curve* (DD), i.e., there is a change in *quantity demanded* (Q_d).

(2) When other influences on buying plans changes, there is *a shift of demand curve,* i.e., there is a change in demand (DD).

11. **If a change in one of other influences increases (decreases) demand, the demand curve will shift rightward (leftward) → DD↑(↓).**

❶ A decrease in the quantity demanded

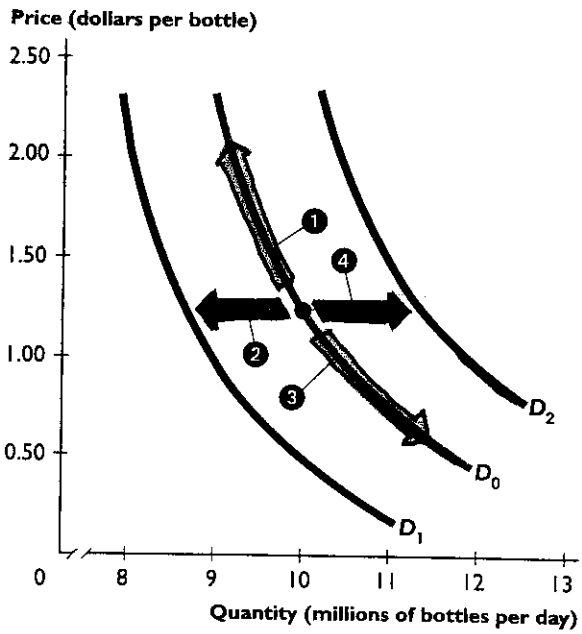
If the price of a good rises, *cet. par.*, the quantity demanded decreases. There is a movement up along the demand curve D_0.

❷ A decrease in demand

Demand decreases and the demand curve shifts leftward (from D_0 to D_1) if

- The price of a substitute falls or the price of a complement rises.
- The price of the good is expected to fall.
- Income decreases.*
- Expected future income or credit decreases.
- The number of buyers decreases.

* Bottled water is a normal good.



❸ An increase in the quantity demanded

If the price of a good falls, *cet. par.*, the quantity demanded increases. There is a movement down along the demand curve D_0.

❹ An increase in demand

Demand increases and the demand curve shifts rightward (from D_0 to D_2) if

- The price of a substitute rises or the price of a complement falls.
- The price of the good is expected to rise.
- Income increases.
- Expected future income or credit increases.
- The number of buyers increases.

The behavior of sellers (SS)

Individual supply (ss)

12. *Supply* (ss): The *positive* relationship between the quantity supplied (q_s) and the price (p) *when all other influences on selling plans* (the prices of related goods, the prices of resources other inputs, expected future prices, number of sellers, productivity) remain the same during a given time period.

13. ss can be specified as:

$q_s = f(p; p', pr, exp, n', T)$

where q_s = quantity supplied, p = the price, p' = prices of related goods, pr = prices of resources and other inputs, exp = expected future prices, n' = number of sellers, T = productivity (technology or weather).

14. *Quantity supplied* (q_s): the amount of any good, service, or resource that people are willing and able sell during a specified period at a specified price, i.e., *one quantity at one price*.
15. **Supply (ss)** is *a list of quantities at different prices* illustrated by **a supply schedule** and **a supply curve**.

Market Supply (SS): the sum of the supplies of all sellers in the market.

16. Supply (SS) can be specified as

$Q_s = f(p; p', pr, exp, n', T)$,

where Q_s = quantity demanded, p = price, p' = prices of related goods, pr = prices of resources and other inputs, exp = expected future prices, n' = number of sellers, T = productivity (technology or weather).

17. Assumptions:

(1). **The law of supply**: Other influences (things) remaining the same, if the price of a good rises (falls), the quantity supplied of that good increases (decreases), i.e., the relationship between p and Q_s is positive and the supply curve is upward sloping. This is due to the increasing opportunity cost.

(2). **Other influences (things) remain the same.**
(a) the prices of related goods; (b) the prices of resources; (c) expectations; (d) the number of sellers; (e) productivity.

18. **Change in Q_s (quantity supplied) vs Change in SS (supply)**

(1) When the price of the good changes and other influences on selling plans remain the same, there is *a movement along the supply curve* (SS), i.e., there is a change in quantity supplied (Q_s).

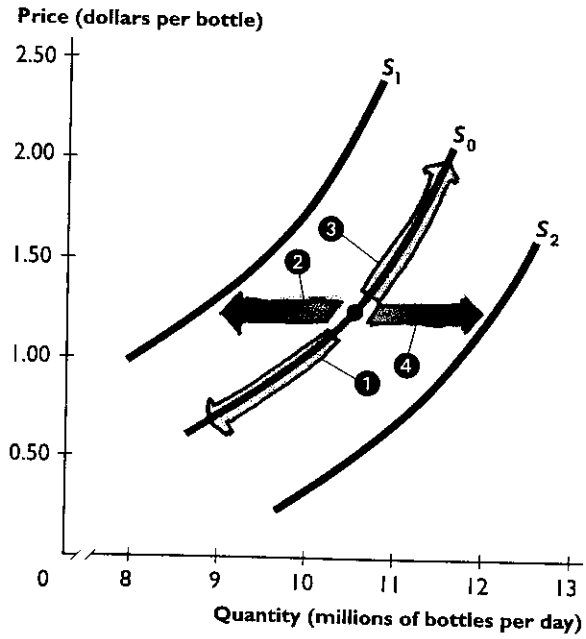
(2) When any other influences on selling plans change, there is *a shift of supply curve*, i.e., there is *a change in supply* (SS).

19. **If a change in one of other influences increases (decreases) supply, the supply curve will shift rightward (leftward) → SS↑ (↓)**

❶ A decrease in the quantity supplied
If the price of a good falls, *cet. par.*, the quantity supplied decreases. There is a movement down along the demand curve S_0.

❷ A decrease in supply
Supply decreases and the supply curve shifts leftward (from S_0 to S_1) if

- The price of a substitute in production rises.
- The price of a complement in production falls.
- A resource price or other input price rises.
- The price of the good is expected to rise.
- The number of sellers decreases.
- Productivity decreases.



❸ An increase in the quantity supplied
If the price of a good rises, *cet. par.*, the quantity supplied increases. There is a movement up along the supply curve S_0.

❹ An increase in supply
Supply increases and the supply curve shifts rightward (from S_0 to S_2) if

- The price of a substitute in production falls.
- The price of a complement in production rises.
- A resource price or other input price falls.
- The price of the good is expected to fall.
- The number of sellers increases.
- Productivity increases.

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A. Smith's "Wealth of Nations" (1776)

(a) Resources are owned by citizen because there is the private property system.

(b) The economy is harmonious and requires the minimum of government interference.

(c) Each individual was motivated by *self-interest*, they each act for the good of the whole, guided by *invisible hand* and made possible by the free play of competition.

(d) *Free competition* was the essential ingredient of the efficient economy.

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Economic Model: **Market**

20. **Assumptions**

a. Other influences (things) remain the same

DD: the prices of related goods (p'), expected future price (exp), income (I), expected income and credit (exI), number of buyers (n), preferences (t).

SS: the price of related goods (p'), prices of resources and other inputs (pr), expected future prices (exp), the number of sellers (n'), productivity (T) (technology or weather).

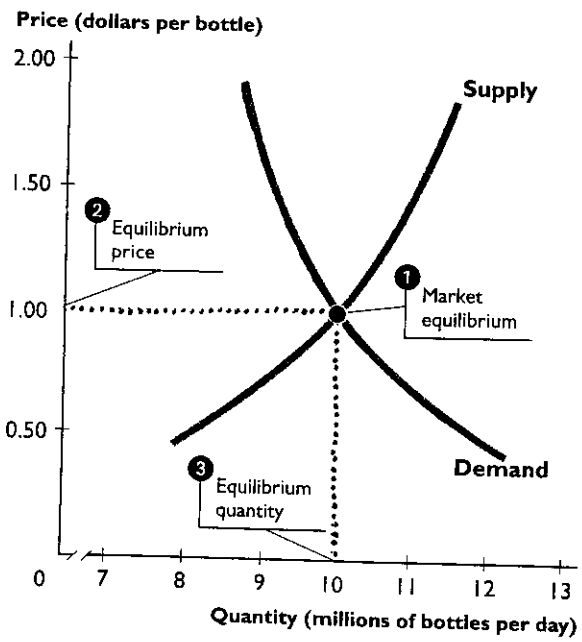
b. Given a time period

c. The laws of demand and supply hold.

21. DD, SS and market

P	Q_d	Q_s	shortage (-) or surplus (+)	pressure on P
2.0	8.5	11.5	3	↓
1.5	9.0	11.0	2	↓
1.0	**10.0**	**10.0**	**0**	→
0.5	12.0	8.0	-4	↑

1. **Shortage** (excess demand) = $Q_s - Q_d < 0$ at a particular price.
2. **Surplus** (excess supply) = $Q_s - Q_d > 0$ at a particular price.
3. $Q_s - Q_d = 0$, i.e., $Q_s = Q_d$ = equilibrium quantity, P = equilibrium price.
4. **Equilibrium** is a situation in which opposing force balance each other.
   Market equilibrium occurs where $Q_s = Q_d$.
5. **Equilibriun Price**: The price at which $Q_d = Q_s$. Equilibrium Quantity: The quantity at which $Q_d = Q_s$. At equilibrium, P = 1.0 and Q = 10.
6. **Price (P)** is a market's automatic regulator.



1. Market equilibrium occurs at the intersection of the demand curve and the supply curve.
2. The equilibrium price is $1.00 a bottle.
3. At the equilibrium price, the quantity demanded and the quantity supplied are 10 million bottles a day, which is the equilibrium quantity.

Predicting changes in equilibrium price and quantity

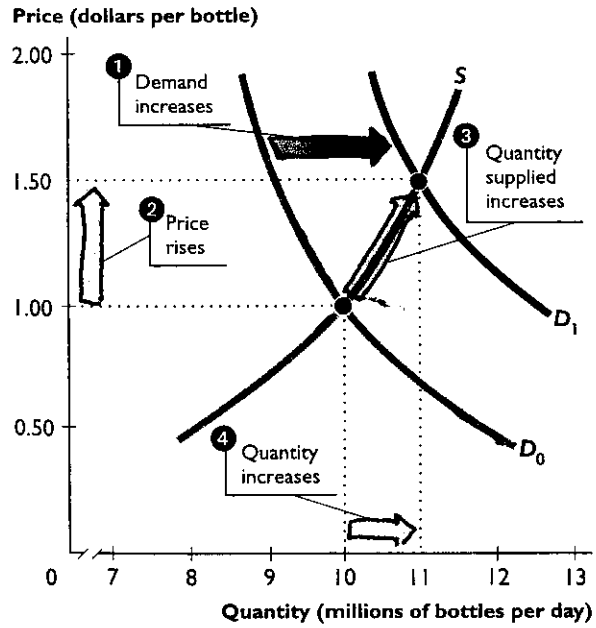
Effects of changes in Demand (DD)

22. An increase (A decrease) in demand (DD) raises (lowers) price (P) and raises (lowers) quantity supplied (Q_s) and equilibrium quantity. [*Please read Figure 4.11 on p.101 carefully*].

(a) An increase in DD

Cause: Tap water is unsafe →
Demand for bottled water increases
→ DD↑. SS→.

Effect: P↑, Q↑.



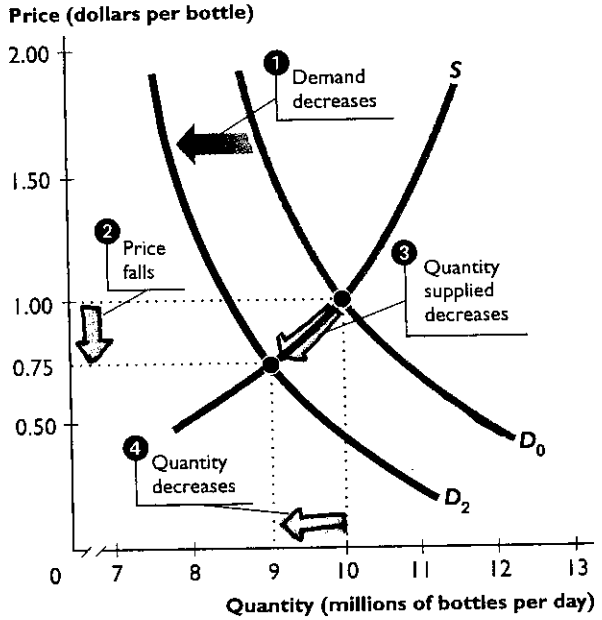
(a) An increase in demand

❶ An increase in demand shifts the demand curve rightward to D_1 and creates a shortage. ❷ The price rises, ❸ the quantity supplied increases, and ❹ the equilibrium quantity increases.

(b) A decrease in DD

Cause:
The price of a zero calorie sport drink falls (p'↓) →
Demand for bottled water decreases
→ DD↓, SS →.

Effect: P↓, Q↓.



(b) A decrease in demand

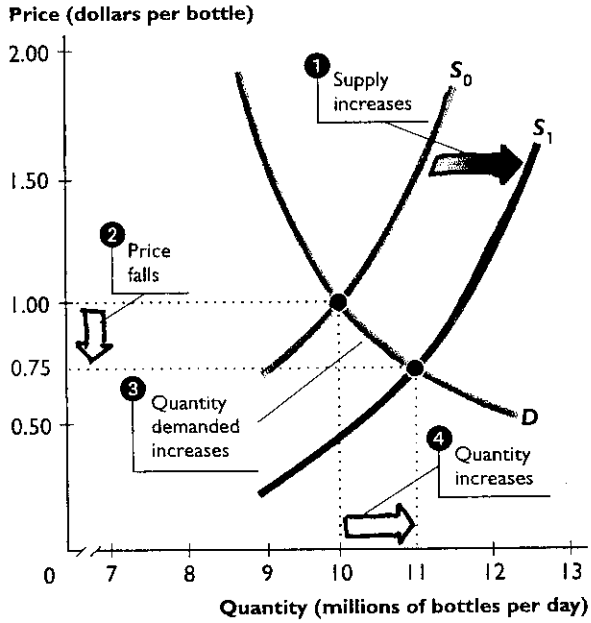
❶ A decrease in demand shifts the demand curve leftward to D_2 and creates a surplus. ❷ The price falls, ❸ the quantity supplied decreases, and ❹ the equilibrium quantity decreases.

Effects of change in Supply (SS)

23. An increase (A decrease) in supply (SS) lowers (raises) price (P) and raises (lowers) quantity demanded (Q_d) and equilibrium quantity. [*Please read Figure 4.12 p.102 carefully*]

(a) An increase in SS

Cause: European water bottlers buy springs and open new plants in U.S.
→
Supply of bottled water increases
→ SS↑, DD→.
Effect: P↓, Q↑.

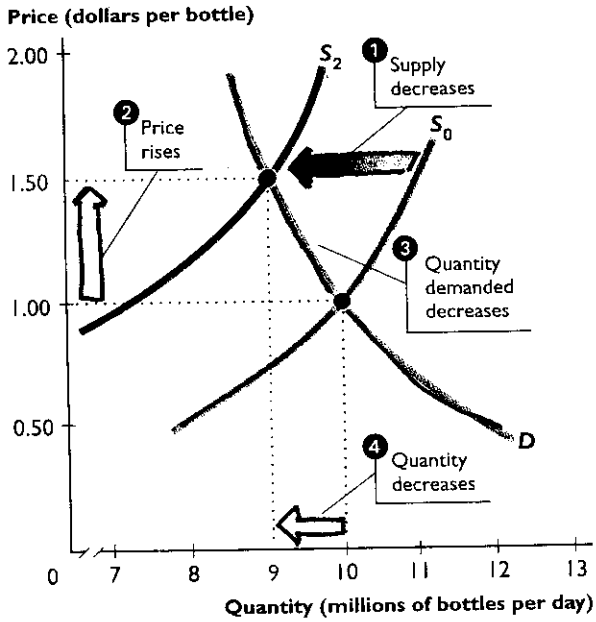


(a) An increase in supply

❶ An increase in supply shifts the supply curve rightward to S_1 and creates a surplus. ❷ The price falls, ❸ the quantity demanded increases, and ❹ the equilibrium quantity increases.

(b) A decrease in SS

Cause:
A drought dry up some springs →
Supply of bottled water decreases
→ SS↓, DD →.
Effect: P↑, Q↓.



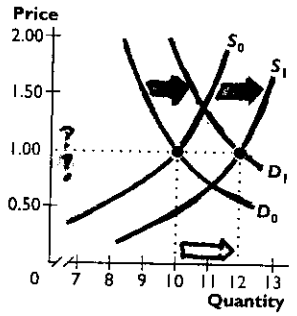
(b) A decrease in supply

❶ A decrease in supply shifts the supply curve leftward to S_2 and creates a shortage. ❷ The price rises, ❸ the quantity demanded decreases, and ❹ the equilibrium quantity decreases.

Effect of changes in Both Demand (DD) and Supply (SS) (Please read p. 104 and Figure 4.13 on p. 105 carefully)

(a) An increase in both DD and SS

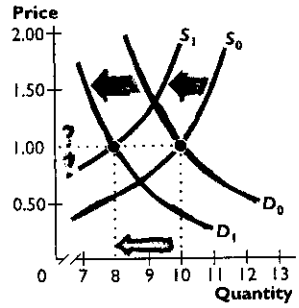
Cause: DD↑ and SS↑
Effect: P (?), Q↑



(e) Increase in both demand and supply

(b) A decrease in both DD and SS

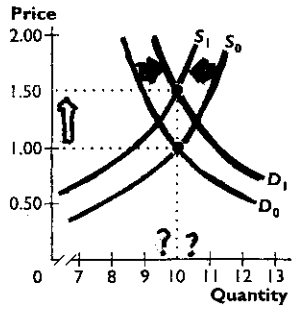
Cause: DD↓ and SS↓
Effect: P (?), Q↓



(i) Decrease in both demand and supply

(c) An increase in DD and a decrease in SS

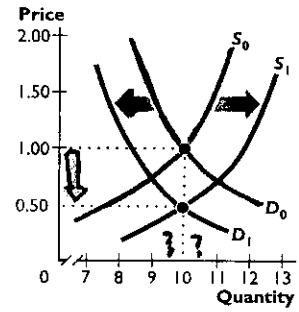
Cause: DD↑ and SS↓
Effect: P ↑, Q (?)



(h) Increase in demand and decrease in supply

(d) A decrease in DD and an increase in SS

Cause: DD↓ and SS↑
Effect: P ↓, Q (?)



(f) Decrease in demand and increase in supply