
Competitive markets

The nature of markets

- A market originally was a place where people gathered to buy and sell goods. (people meet face to face)
  - ✓ Fruit and vegetable market
  - ✓ Fish market
  - ✓Clothes store, etc.

- Nowadays, market include any kind of arrangement where buyers and sellers of goods, services or resources are linked together to carry out an exchange. (people may or may not meet)
  - ✓ Online shop
  - ✓ Stock market
  - ✓ International trade, etc.

Market Classification

- **Local market**: buyers and sellers originate from a local area.
- **National market**: buyers and sellers are from anywhere within a country.
- **International market**: buyers and sellers from anywhere in the world.

- **Product market:** Product market: products and services are sold.
- **Resource market:** factors of production are sold.

Competitive Market V.S. Monopoly

- **Competitive market** composed of large numbers of sellers and buyers acting independently, so that no one individual seller or small group of sellers has the ability to control the price of the product sold.
  - ✓ The buyers as a group determine the demand for the product
  - ✓ The sellers as a group determine the supply of the product

➡ The price of the product is determined by the interaction of many sellers and buyers, through the force of demand and supply.

➢ In this chapter, we assume that markets are **perfectly competitive.**

Price taker

- **Monopoly: A firm who is** the sole seller of its product and its product does not have close substitutes.
- other firms cannot enter the market and compete with due to 'barriers to entry'.
  - ✓ Monopoly resources: A key resource required for production is owned by a single firm.
  - ✓ Government regulation: The government gives a single firm the exclusive right to produce some good or service.
  - ✓ The production process: A single firm can produce output at a lower cost than can a larger number of producers

Price Maker


Competitive markets:
Demand and Supply

Demand

- **The behaviour of buyers.**
- The demand of an individual consumer indicates the various quantities of a good(or service) the consumer is **willing and able** to buy at different possible prices during a particular time period, ceteris paribus.
  - ✓ 'Willing' – the consumer wants to buy the goods
  - ✓ 'Able' – the consumer can afford to buy it
- Buyer of goods/services market: Consumers （households）
- Buyer of factors of production: Firms

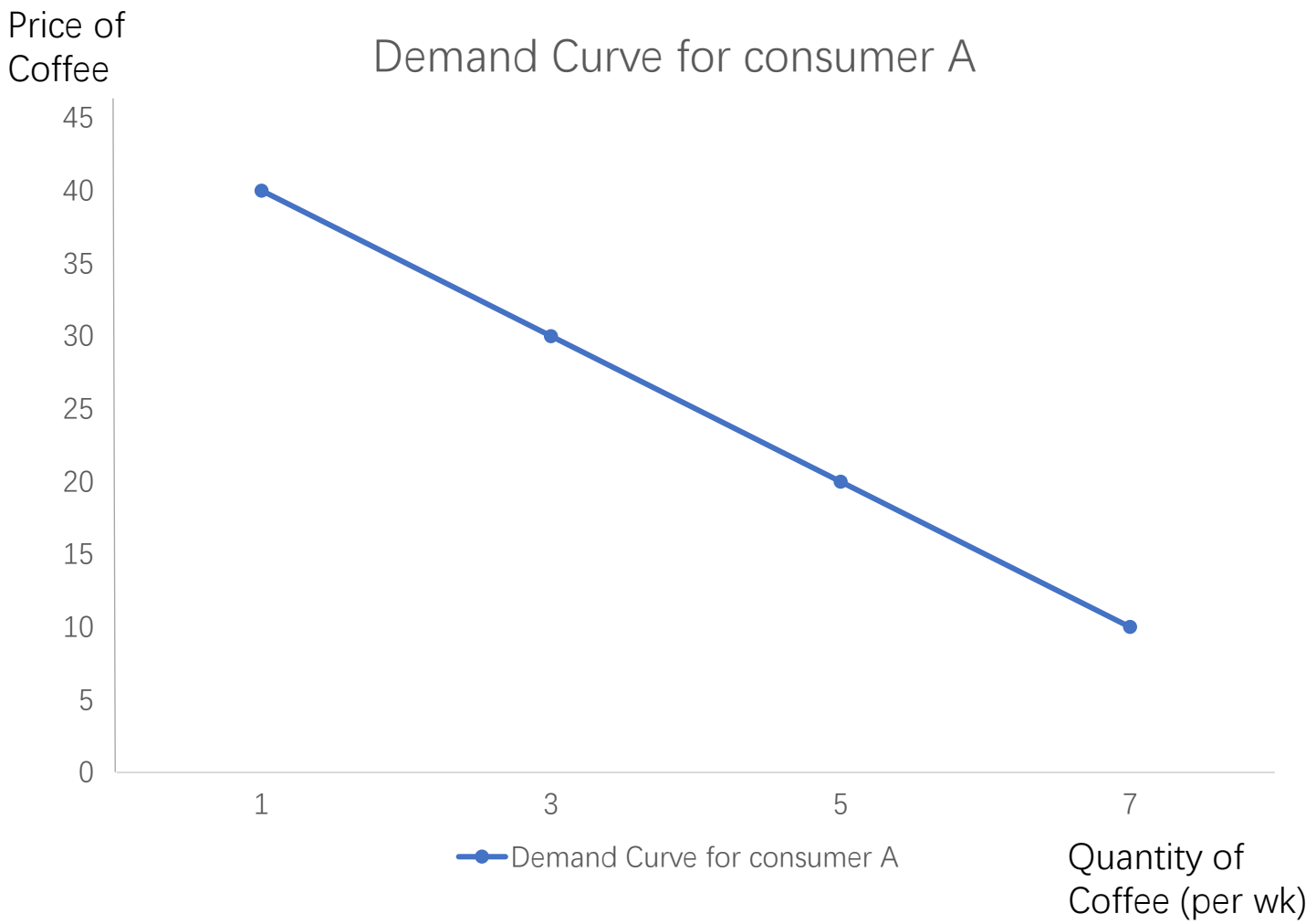
Demand schedule

Demand schedule for a consumer	
Price of Coffee	Quantity of Coffee demand (per wk)
40	1
30	3
20	5
10	7

- Concentrate only on the relationship between **the quantity of a good the consumer is willing and able to buy** and its **Price.**
- It do not tell us anything about how many cup of coffee the consumer will actually buy and what price the consumer will pay. It only Tells us how many coffee the consumer would be prepared to buy in different prices.
- One consumer's demand is affected not only by price. But also, by many other things, like income, tastes and prices of related goods, etc.

Demand Curve

Demand schedule for a consumer	
Price of Coffee	Quantity of Coffee demand (per wk)
40	1
30	3
20	5
10	7

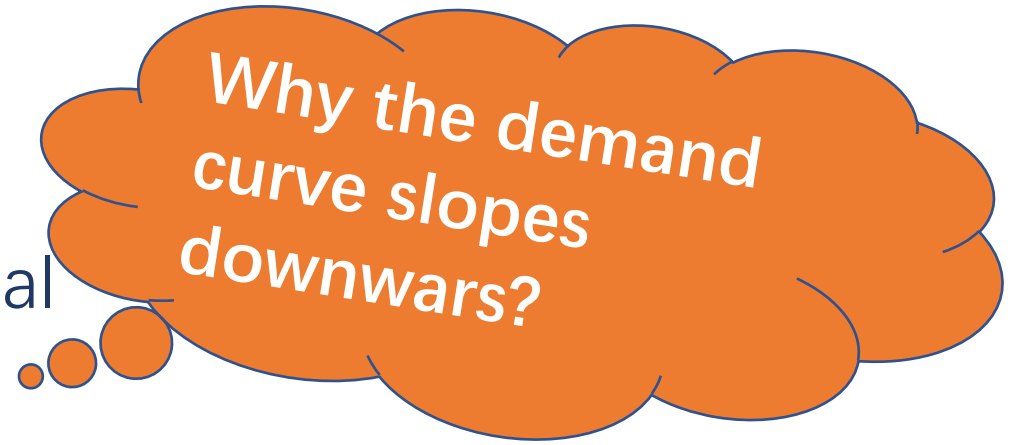


The Law of Demand

- As the price of a good falls, the quantity of the good demanded increases.
- As the price of a good go up , the quantity of the good demanded decreases.

→ **Negative relationship.**

→ **Causal relationship.**



- **The law of Demand:** The **negative** causal relationship between price and quantity demanded.

The Marginal utility

- **Utility:** satisfaction that consumers gain from consuming something.
  - ➢ subjective concept
  - ➢ Each unit of utility we call it **util**.

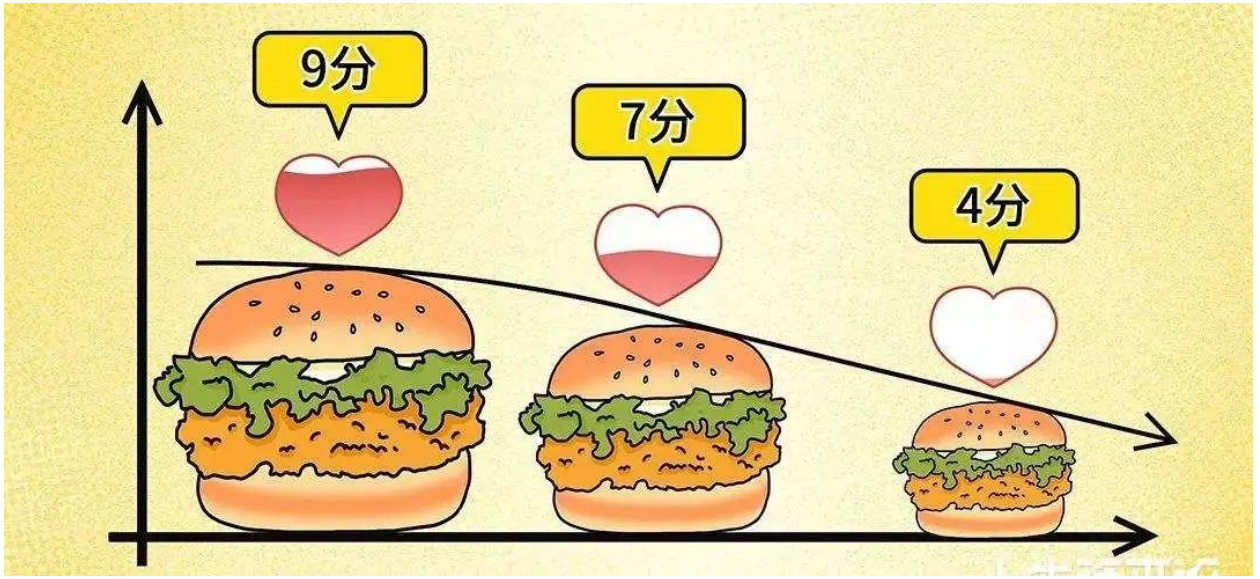
- **Total utility**: total satisfaction that consumers get from consuming something.

- **Marginal utility:** extra satisfaction that consumers receive from consuming one more unit of a good.

The law of diminishing marginal utility

The extra benefit provided by each additional unit increases by smaller and smaller amounts.

No. of burger eat per day	Total utility (utils)	Marginal utility (utils)
0	0	0
1	9	9
2	16	7
3	20	4
4	20	0
5	17	-3



Why the demand curve slopes downwards?

- Since each successive unit of the good you consume produces less and less benefit. You will be willing to buy each extra unit only if it has a lower and lower price. (ceteris paribus)

→ The demand curve can be called **Marginal Benefit (MB) Curve**

The income and substitution effects

(alternative explanation of the law of demand) – normal goods

Total effect of a price change being the sum of the following two effects:

1. **The substitution effect**: if the price of a good falls, the consumer substitutes (buy more) of the new less expensive good.
2. **The income effect**: as the price falls, the "real income" (purchasing power) increase, consumer tend to buy more.

- In case of most goods, substitution effect has a bigger effect.
- When the goods whose prices take up a large % of income, the income effect will play a more important role.

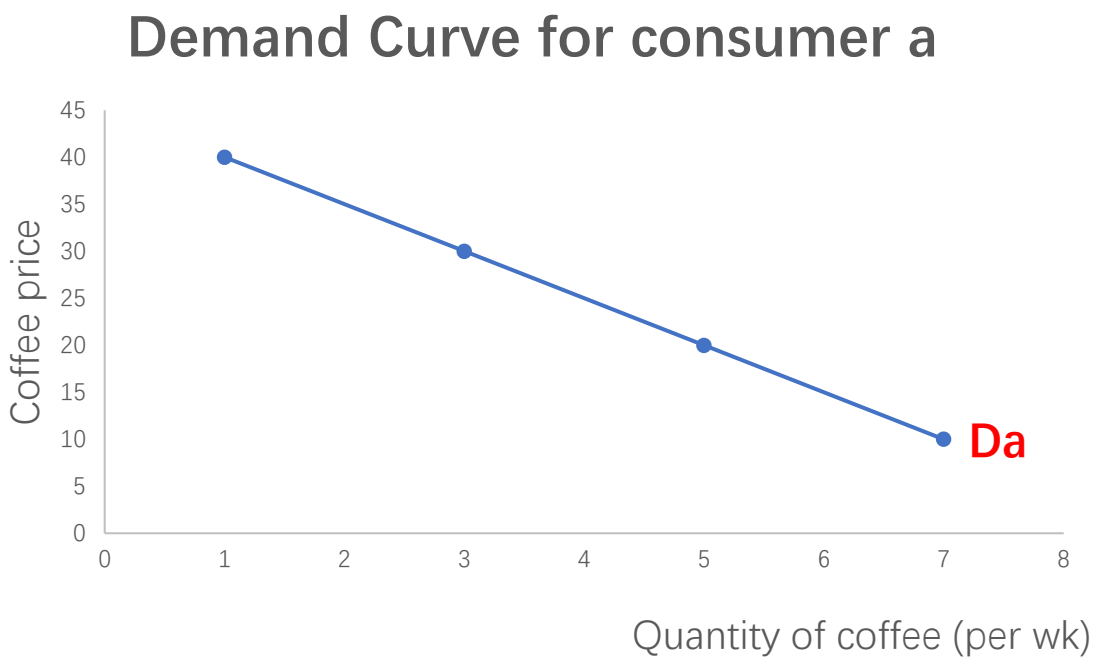
From individual demand to market demand

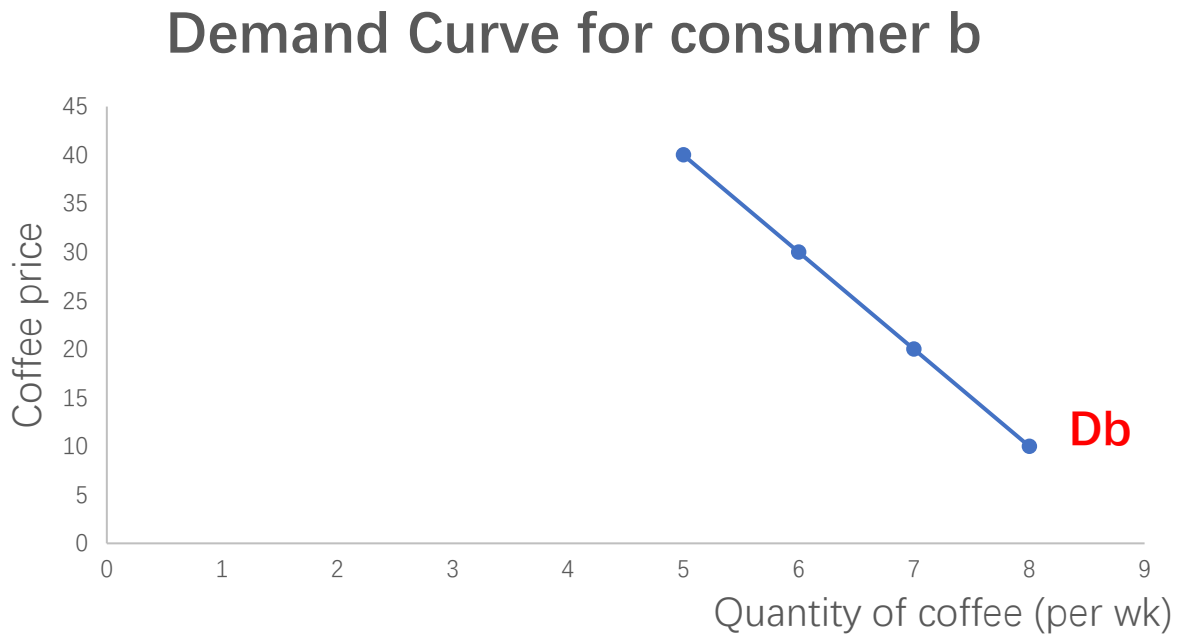
- Different consumers have different preferences (Likes and dislikes), So different consumers will have different demand curve.

Demand schedule for consumer A	
Price of Coffee	Quantity of Coffee demand (per wk)
40	1
30	3
20	5
10	7

Demand schedule for consumer B	
Price of Coffee	Quantity of Coffee demand (per wk)
40	5
30	6
20	7
10	8

From individual demand to market demand

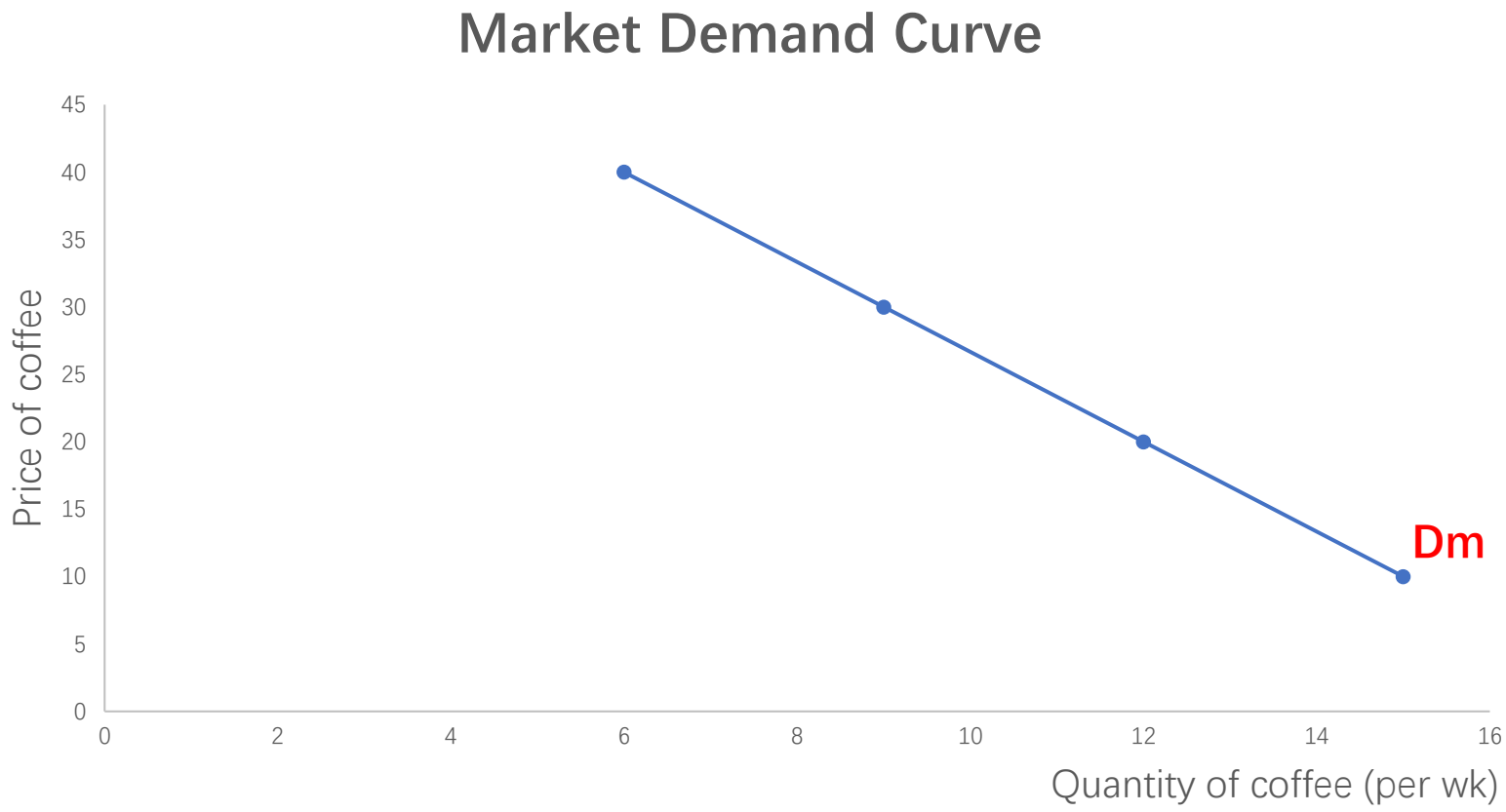




Market Demand (consumer a+b+c+…)

Add up the demand of consumer a and b.

Market Demand	
Price of Coffee	Quantity of Coffee demand (per wk)
40	1+5=6
30	3+6=9
20	5+7=12
10	7+8=15



Market demand is the sum of all individual demands for one good.

Non-price determinants of demand

- When we examined the relationship Between price and quantity demanded, we made ceteris paribus assumption that all other variables will be constant.
- What happens to the demand curve when this variables change?

The **non-price determinants of demand** are the variables other than price that can influence demand.

✓Changes in the determinants of demand cause shifts in the demand curve: the entire demand curve moves to the right or to the left.

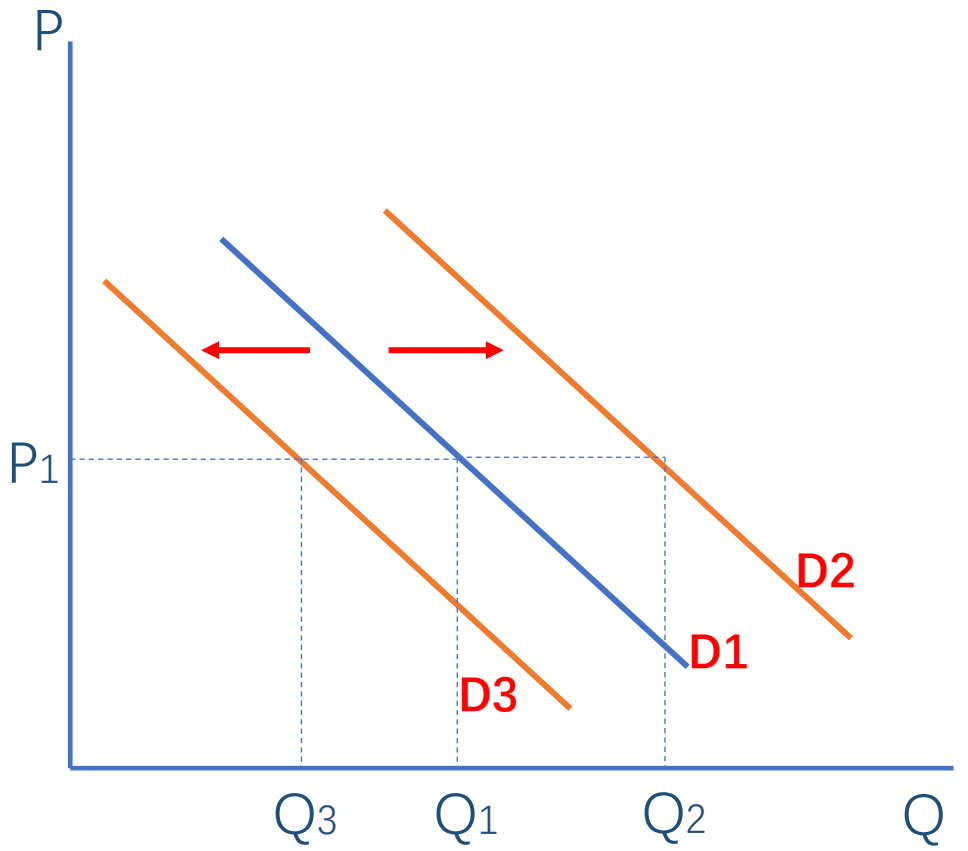
Non-price determinants of demand

- Income

- **For normal goods:**

Most goods we buy are **normal goods**.

- When income increase, people tend to buy more normal goods. Thus, results in a rightwards shift in the demand curve. (D1 to D2)
- When income decrease, people will buy less and results in a leftwards shift in the demand curve. (D1 to D3)



Non-price determinants of demand

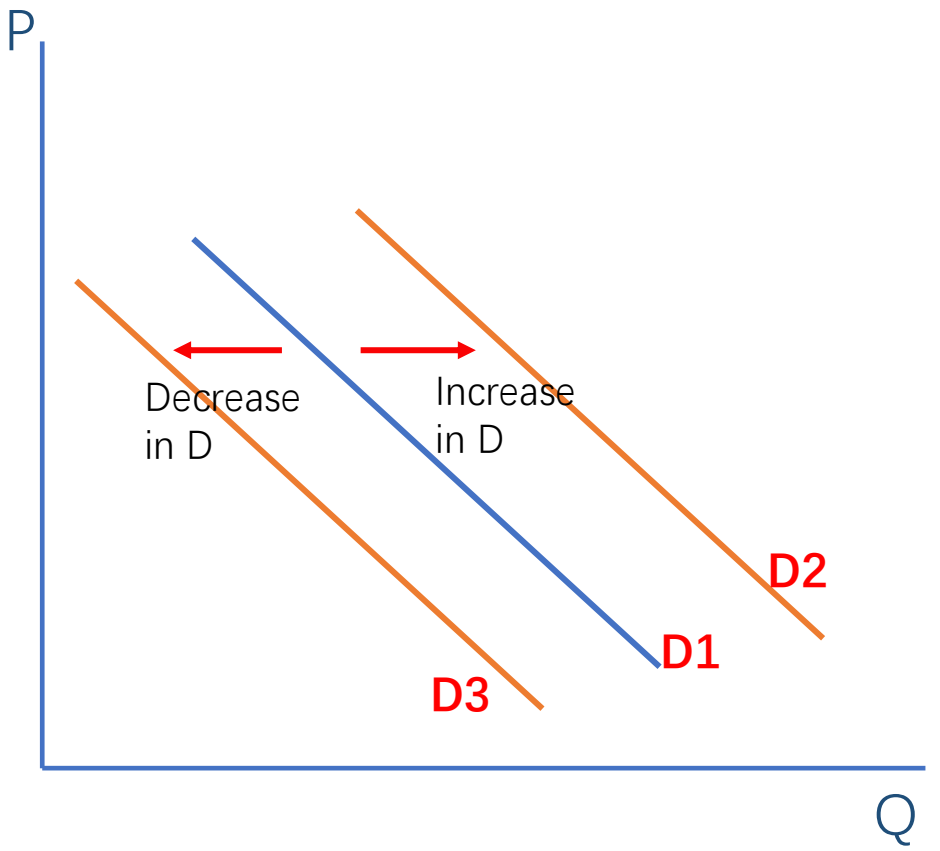
- Income

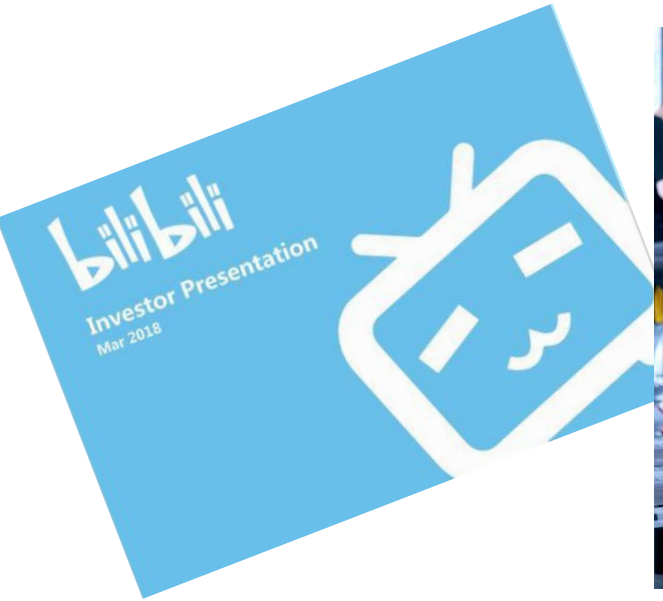
- **For inferior goods:**

People will buy more Inferior goods when their income decrease (D1 to D2)

buy less inferior goods when their income increase (D1 to D3).

✓ Examples of inferior goods: second-hand car, clothes, bus ticket, etc.

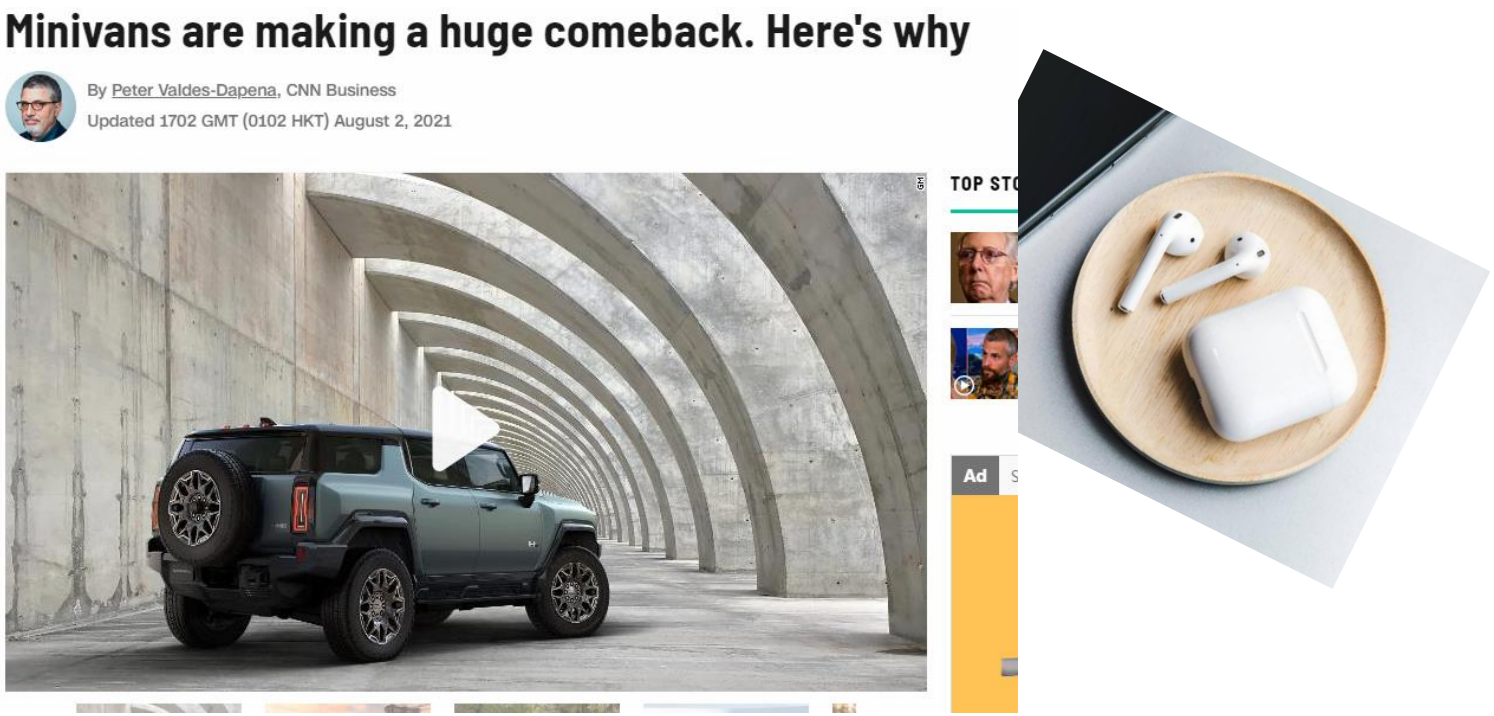




Non-price determinants of demand

- Preferences and tastes

- If preferences and taste change in favour of a product, demand for this product will go up and demand curve will shift rightwards.
- If preferences and taste change against the product, demand will decrease and demand curve shift leftwards.



Non-price determinants of demand

- Expectation

- Consumers' expectations about the future may affect their demand for a good or service today.
- E.g. During Covid-19 period, the demand for disposable mask and alcohol pad increased. People expect themselves will be stay at home for quarantine, so they stored up food for future usage.

Non-price determinants of demand

- Prices of substitute goods

Two goods are substitute goods if they satisfy a similar need.

- When product A raise its price, consumer will switch to buy product B, which shift the demand curve B rightwards.
- When product A launch discount, consumer will buy more of product A instead of B, the demand curve B shift leftwards.

Non-price determinants of demand

- Price of Complementary goods

- Tow goods are complementary goods if they tend to be **used together**.
  - ✓ Examples: printer and ink box, swimming suits and swimming glasses, etc.

- A fall in the price of A lead to an increase in the demand for B, the demand curve will be shift rightwards.
- An increase in the price of A lead to a fall in the demand for B, the demand curve will be shift leftwards.

Non-price determinants of demand

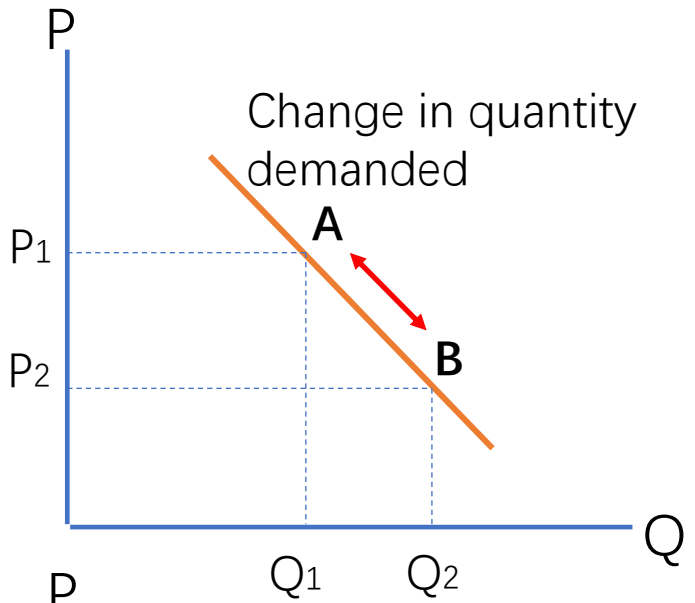
- Population

- Population change means the number of buyer change.

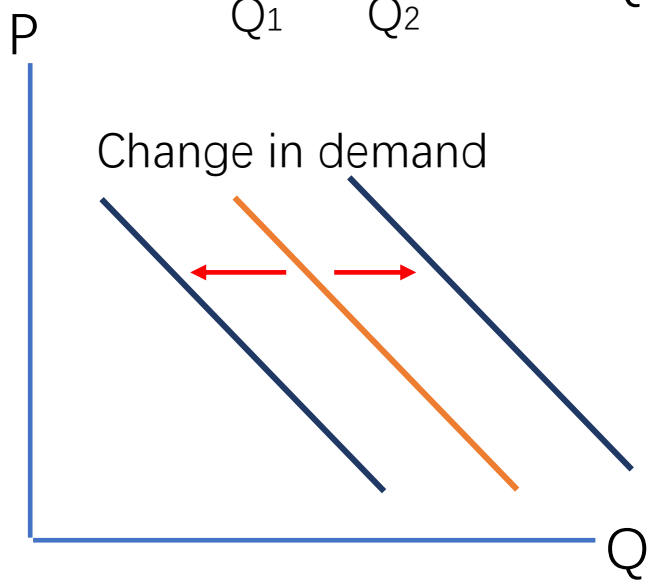
- When number of buyers increase, demand increases and result in demand curve shift rightwards.
- When number of buyers decrease, demand decreases and result in demand curve shift leftwards.

To sum up

- Any change in price produces a **change in quantity demanded**, shown as a movement on the demand curve.



- Any change in a non-price determinant of demand leads to a **change in demand**, shown as a shift of the entire demand curve.



Activity

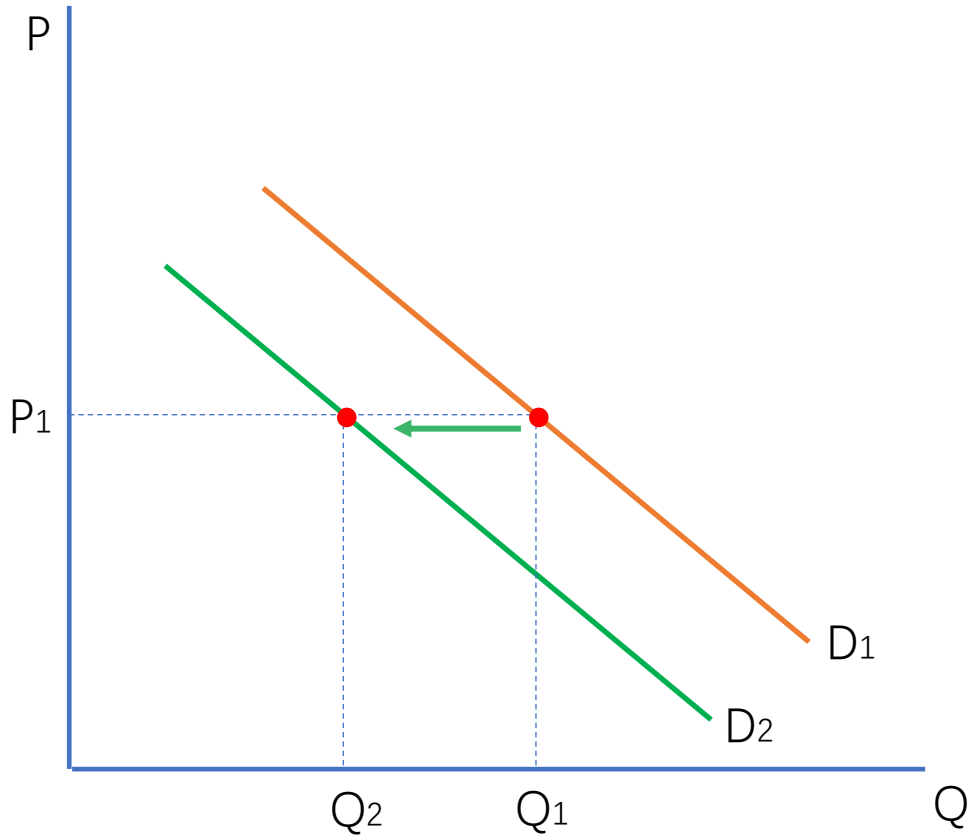
Draw a demand curve of Bluetooth headset. What impact will the following scenarios make to the demand curve? And why?

1) The price deduction of wired headset.
2) The price deduction of cell phone
3) The price deduction of Bluetooth headset
4) The popularity of ‘running with music’

Activity answer

1) The price deduction of wired headset.

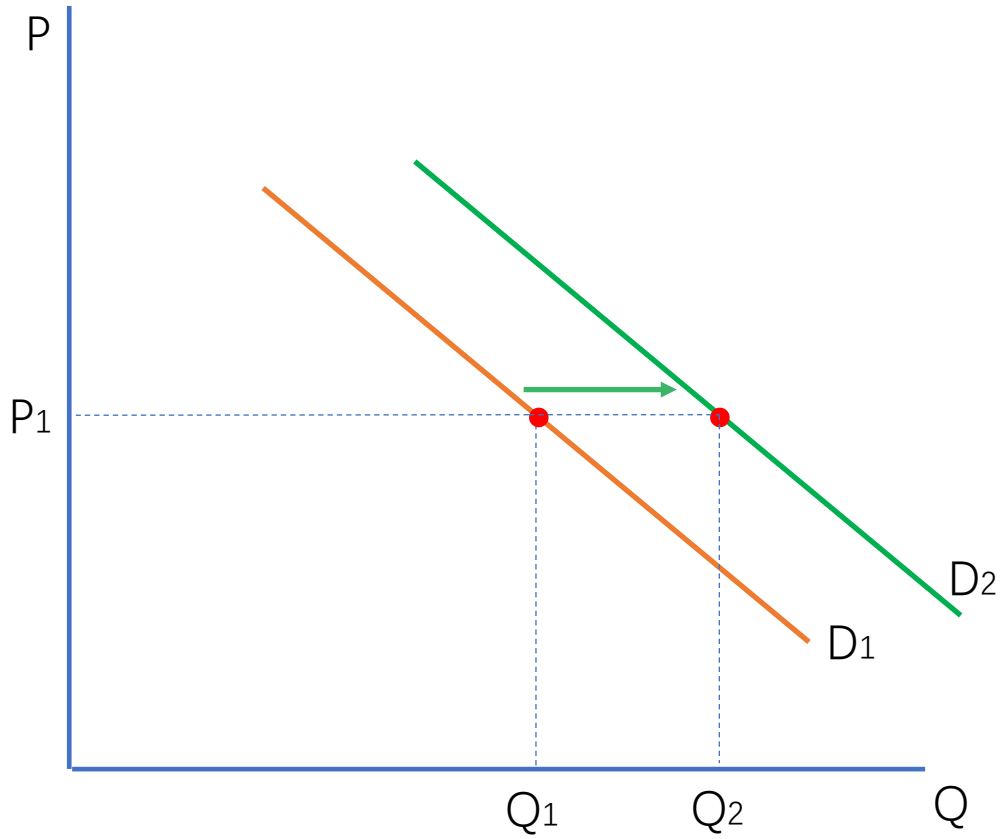
- Wired headset is a **substitutes** of Bluetooth headset.
- When the wired headset price falls, consumers will tend to buy more wired headset, while the demand for Bluetooth headset will goes down, shift its demand curve leftwards.



Activity answer

2) The price deduction of cell phone

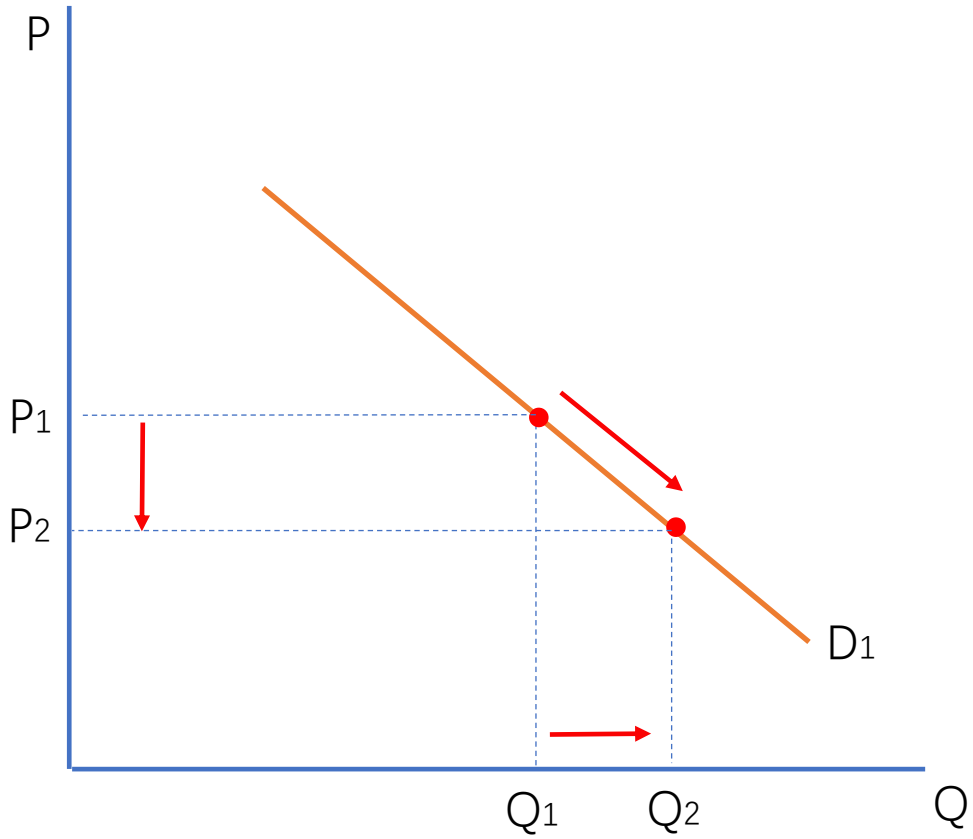
- Cell phone is a **complementary goods** of Bluetooth headset.
- When the cell phone price falls, consumers will buy more cell phones, so the demand for Bluetooth headset will goes up, shift its demand curve rightwards.



Activity answer

3) The price deduction of Bluetooth headset

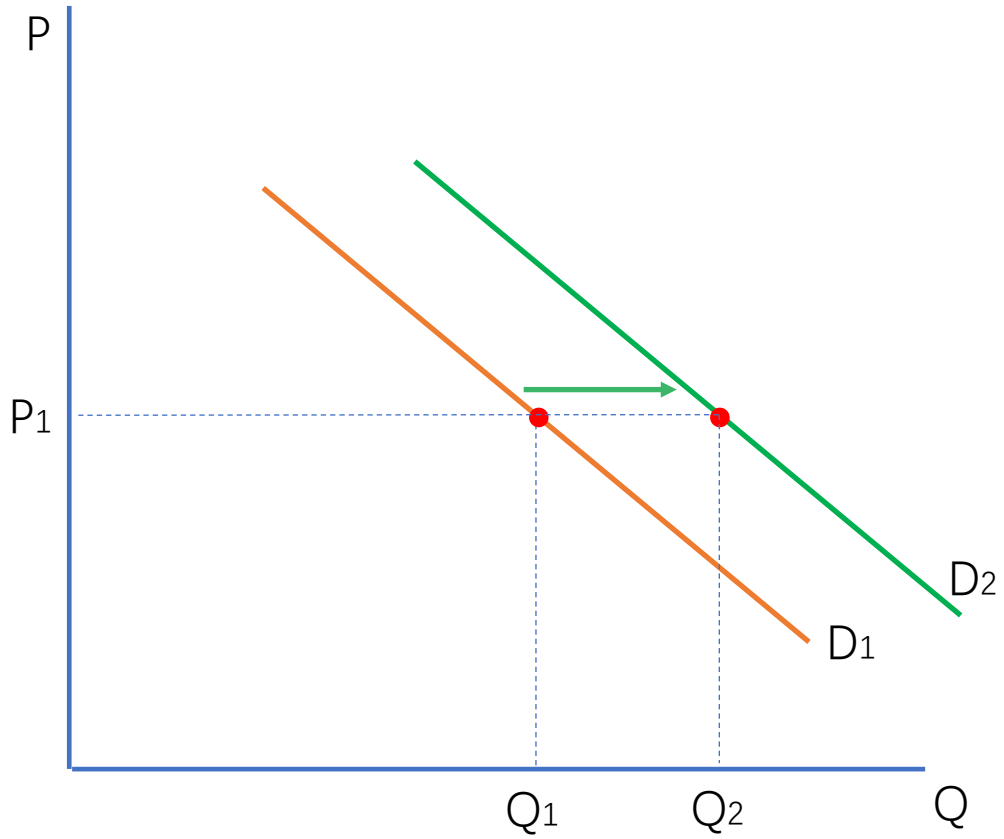
- When the Bluetooth headset price goes down, consumer will buy more, the demand will go up.
- Price goes down from P1 to P2
- Quantity demand from Q1 to Q2
- Demand curve does not move.



Activity answer

4) The popularity of ‘running with music’

- As people follow the trend of ‘running with music’, the demand for Bluetooth headset will go up, the demand curve shifts rightwards.




Competitive markets:
Demand and Supply

Supply

- Behaviour of sellers.

- The supply of an individual firm indicates the various quantities of a good(or Service) a firm is **willing and able to produce** and supply to the market for sale at **different possible prices**, during a particular time period, ceteris paribus.

  ✓ Seller of product markets: Firms
  ✓ Seller of resource markets: Households

Supply schedule

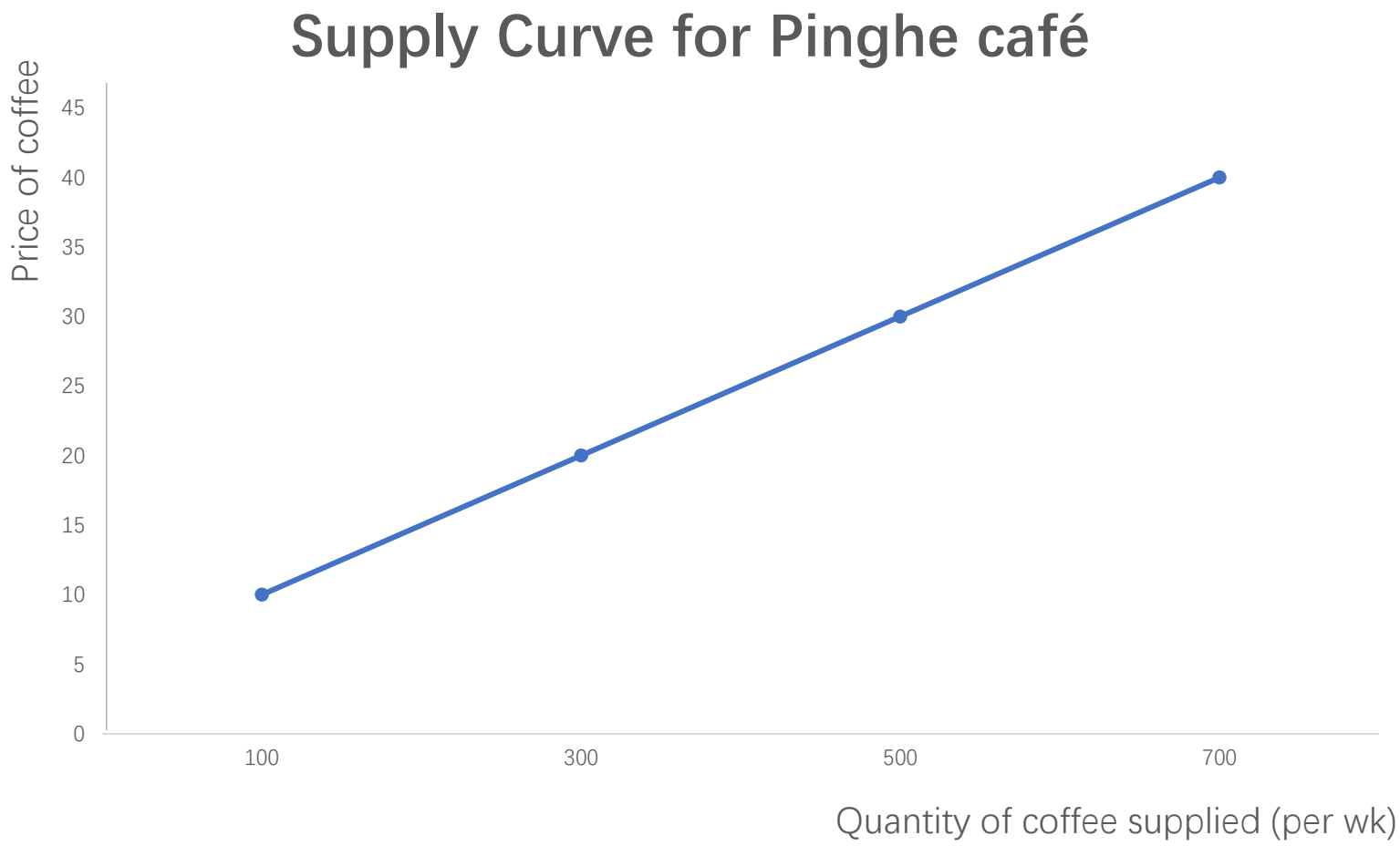
Supply schedule for Pinghe café	
Price of Coffee	Quantity of Coffee demand (per wk)
40	700
30	500
20	300
10	100

Supply schedule: A table showing the various quantities of a good the firm is willing and able to produce and supply at various prices.

- In the example showing on the left, It do not tell us anything about how much coffee the café will actually supply to the market nor what price the café will receive. It only tells us how many coffee the café would be prepared to produce and sell for different price.

Supply curve

Supply schedule for Pinghe café	
Price of Coffee	Quantity of Coffee demand (per wk)
40	700
30	500
20	300
10	100



The law of supply

- Higher price -> profit increase -> produce more(supply increase)
- Lower price -> profit decrease -> produce less(supply decrease)

 **Positive Causal relationship.**

The law of supply: There is a positive causal relationship between the quantity of a good supplied over a particular time period and its price, ceteris paribus.

- ✓ **The supply curve slope upward**

Total product & Marginal product

Total product: total quantity of output produced by the firm.

Marginal product: extra output produced by one additional unit of a variable input.

No. of workers (variable input)	Total product made per hour (burgers)	Marginal product (burgers made)
0	0	0
1	10	10
2	30	20
3	60	30
4	75	15
5	80	5
6	80	0

Diminishing marginal returns:

When inputs and technology are fixed, as more and more units of a variable inputs are added to the fixed inputs, the marginal product at first increases, and then comes a point when it begins to decrease.

The Marginal cost

Definition: The extra cost of producing one more unit of output.

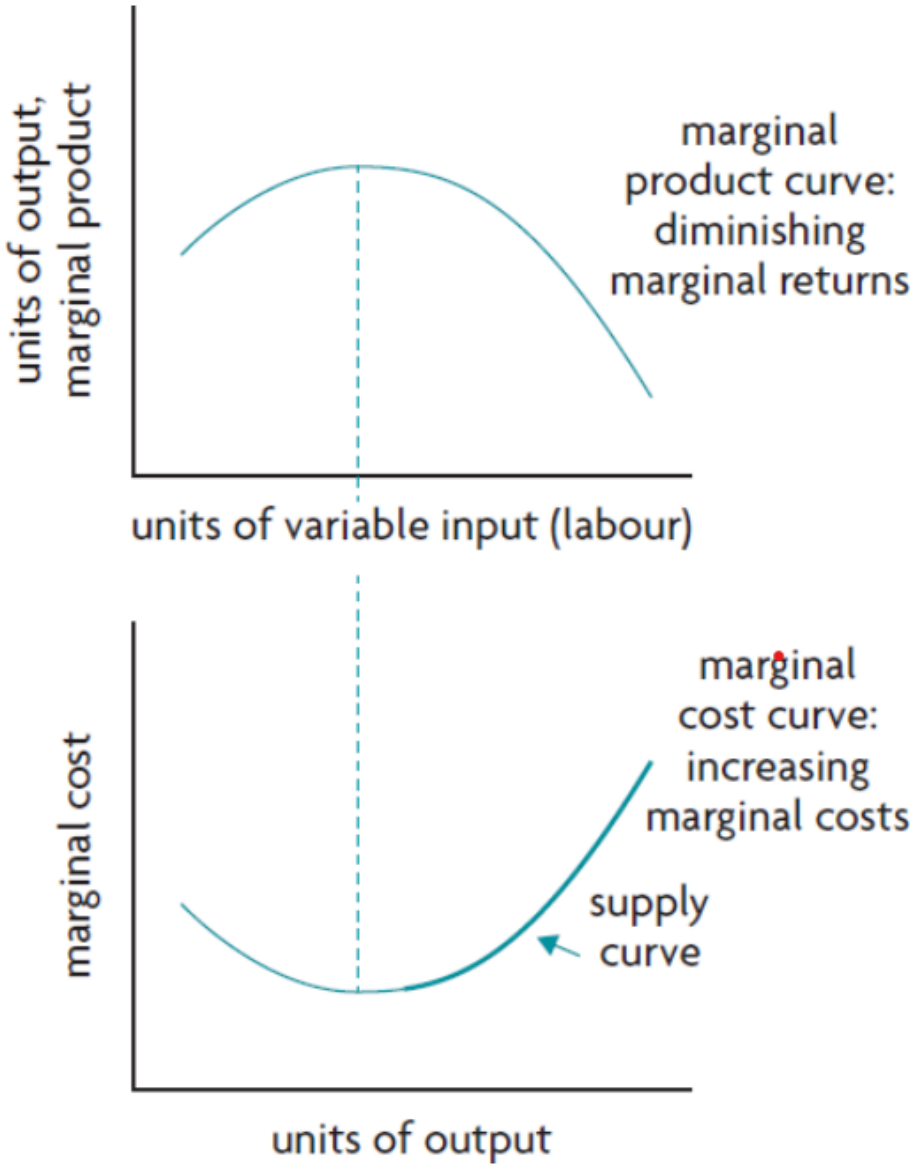
The marginal cost will decrease at the beginning. It reaches the minimum unit cost and start to increase.

➔ $MC = \Delta TC/\Delta Q = \Delta TC / MP$

No. of worker	Total product	Marginal product	Total cost	Marginal cost per unit
1	10	10	20	2
2	30	20	40	1
3	60	30	60	0.67
4	75	15	80	1.33
5	80	5	100	4
6	80	0	120	-

Marginal product & Marginal cost

- When marginal product increases, marginal cost decreases;
- when marginal product is maximum, marginal cost is minimum.
- When marginal product falls, marginal cost increases.



Marginal cost and supply curve

When marginal cost is increasing, the supplier can only produce more output if the price of the good increases to cover the extra cost of each extra unit produced.

producers will be willing to produce and sell an extra unit of the good only of its price increases. The supply curve can therefore also be called a **Marginal cost (MC) curve**.

Short run & Long run

- **Short run**: a time period during which at least one input is fixed and cannot be changed by the firm.
  - Unchanging in quantity and quality.
  - Fixed cost: building, factories, heavy machinery.
  - Variable cost: materials, labours, etc.

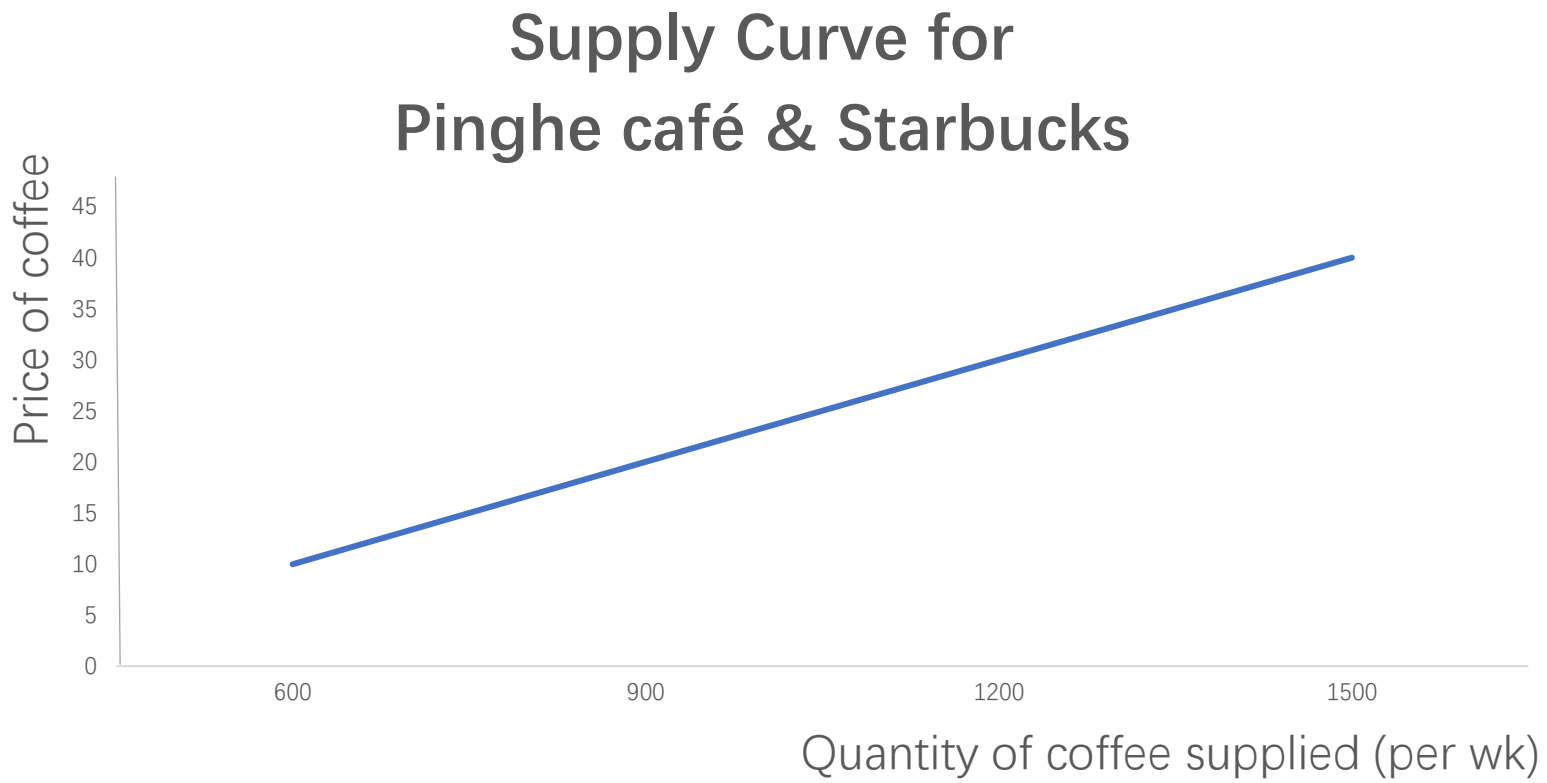
- **Long run**: a time period when all inputs can be changed.
  - All inputs are variable.

* We only consider short run for now.

From individual supply to market supply

- Market supply is the sum of all individual firm's supplies for a good.

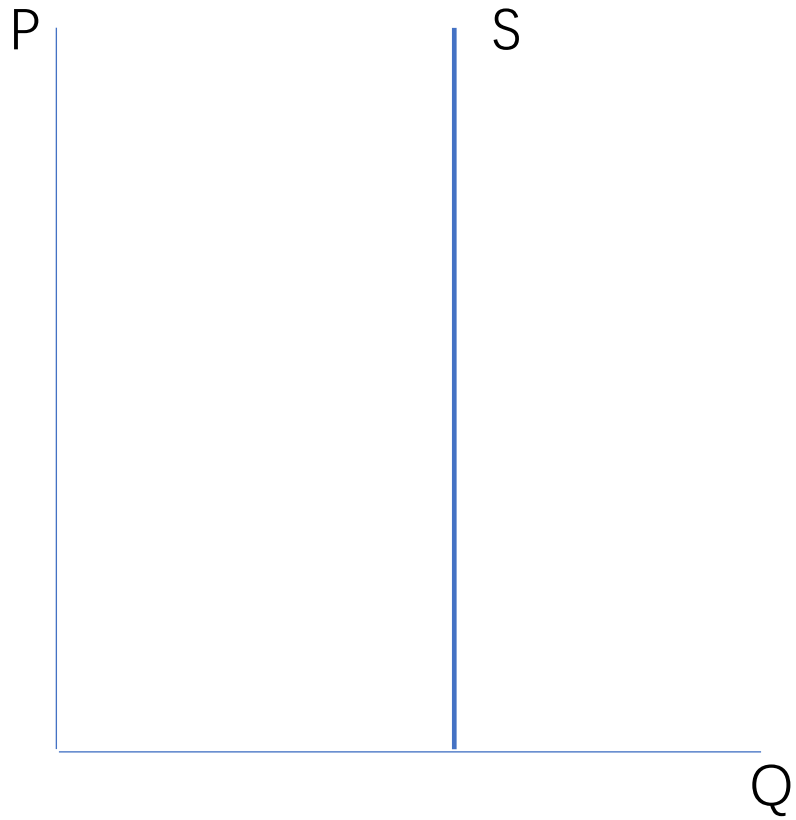
Supply schedule for Pinghe café & Starbucks	
Price of Coffee	Quantity of Coffee demand (per wk)
40	700+800=1500
30	500+700=1200
20	300+600=900
10	100+500=600



The vertical supply curve

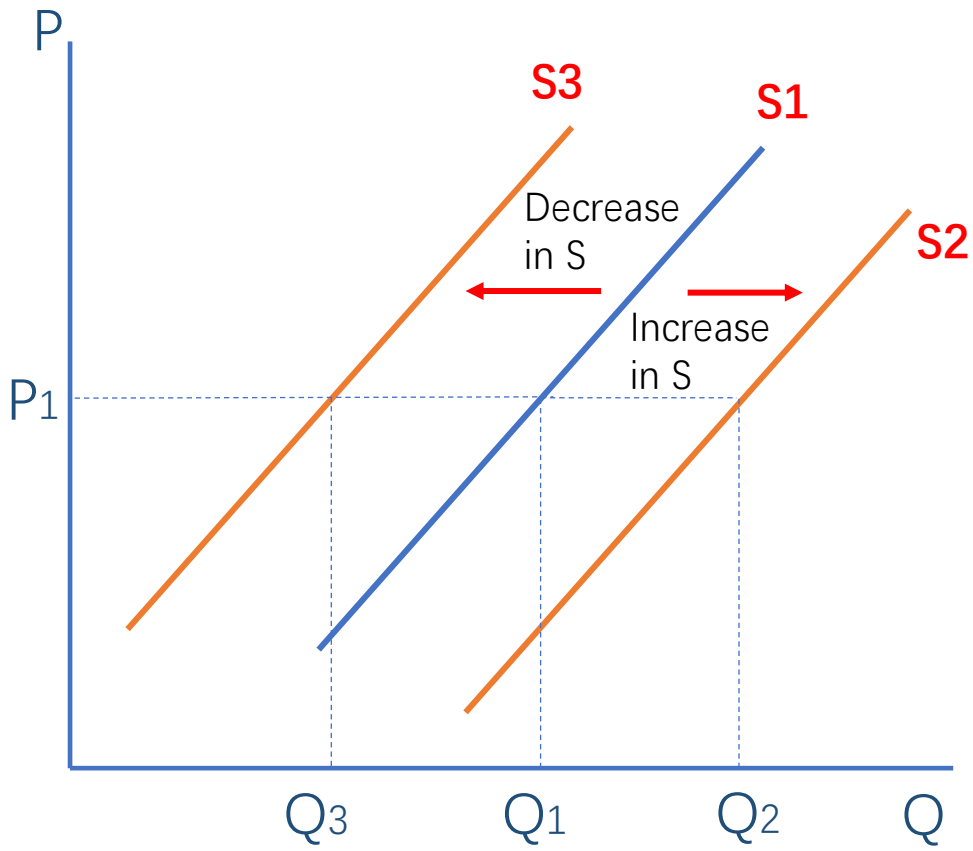
- In some circumstances, the supply curve is vertical at some particular fixed quantity.

- Two reasons:
  1. There is no time to produce more of it. (in short term) E.g., Theatre ticket for a concert.
  2. There is no possibility of ever producing more of it. (in short term and long term), E.g., original painting of Vincent Van Gogh.



Non-price determinants of supply

- The **Non-price determinants of supply** is the factors other than price that can influence supply.
- A rightwards shift means for a given price, supply increases and more is supplied.
- A leftwards shift means for a given price, supply decreases and less is supplied.



Non-price determinants of supply

1. Cost of factors of production

- Including cost of Land, labour, raw material, rent, equipment, transport, etc.
- Negative relationship with supply.
- When the cost of production increase, firm become less profitable, so they produce less, supply curve shift leftwards, vice versa.

2. Technology

- Improved technology lower cost of production, supply increase, supply curve shift rightwards, vice versa

3. The number of firms

- The number of firms increase, supply increase, supply curve shift rightwards.
- The number of firms decrease, supply decrease, supply curve shift leftwards.

Non-price determinants of supply

4. Prices of related goods: competitive supply

- Two or more goods compete for the use of the same resources by one firm. Producing more of one means producing less of the other.
- Product A price fall → an increase in product B supply, B supply curve shift rightwards.
- Product A price increase ➔ an decrease in product B, B supply curve shift leftwards.
- E.g. A farmer choose to plant cucumber or potato.
  Apple choose to produce iPhone or Mac book

Non-price determinants of supply

5. Prices of related goods: joint supply

- The production of goods that are derived from a single product. so that it is not possible to produce more of one without producing more of the other.
- Product A price fall ->an fall in product B supply, B supply curve shift leftwards.
- Product A price increase -> an increase in product B, B supply curve shift rightwards.
- E.g. butter and skimmed milk are both produced from whole milk.

Non-price determinants of supply

6. Producer expectation

- If the producer expect their product price will increase, they may try to withhold some of their current supply for future higher price selling, as a result, the present supply will decrease, supply curve shift leftwards. vice versa.
- E.g. Stock, Bitcoin, Property, etc.

Non-price determinants of supply

7. Taxes （indirect taxes or taxes on profits）

- Firms treated Taxes as if they were costs of production.
- New taxes or tax rate increase → less profitable → less supply → supply curve shift leftwards.
- Tax elimination or tax rate decrease → more profitable → more supply → supply curve shift rightwards.

Non-price determinants of supply

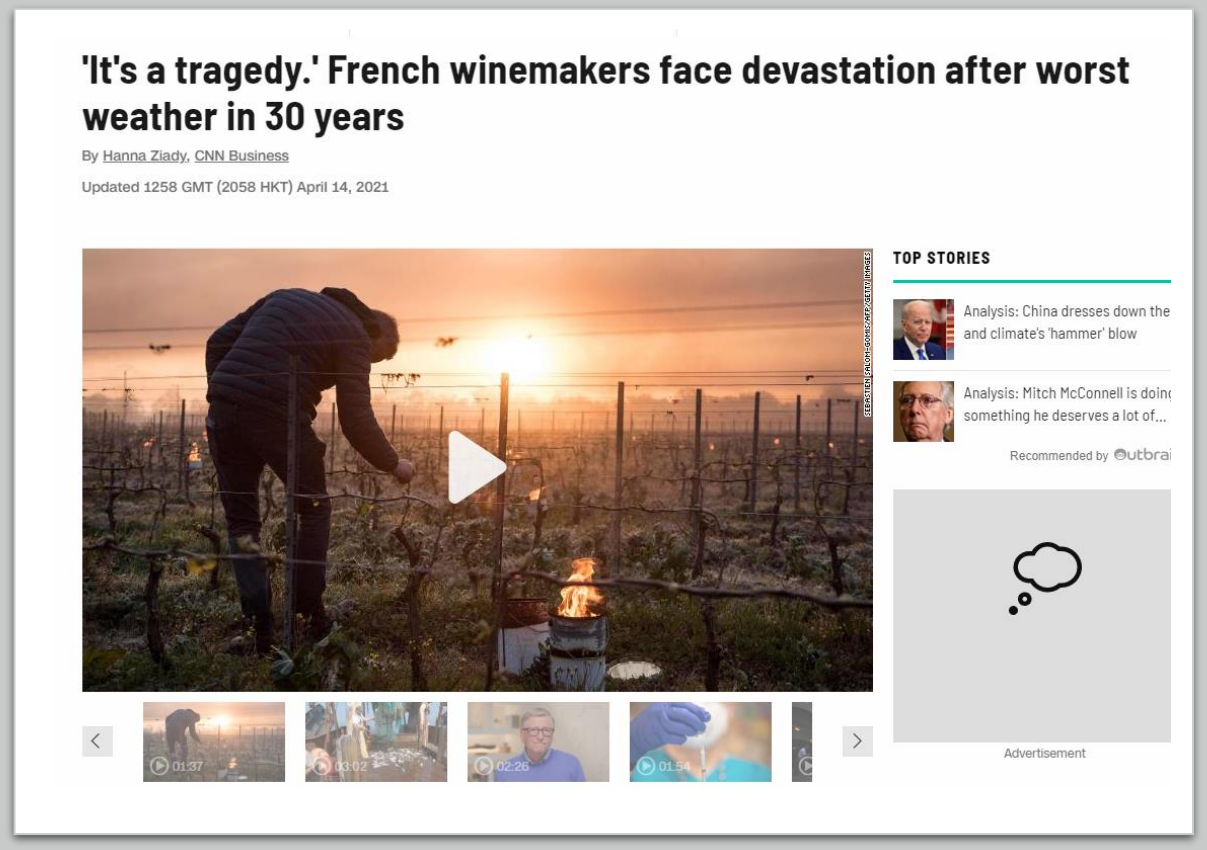
8. Subsidies

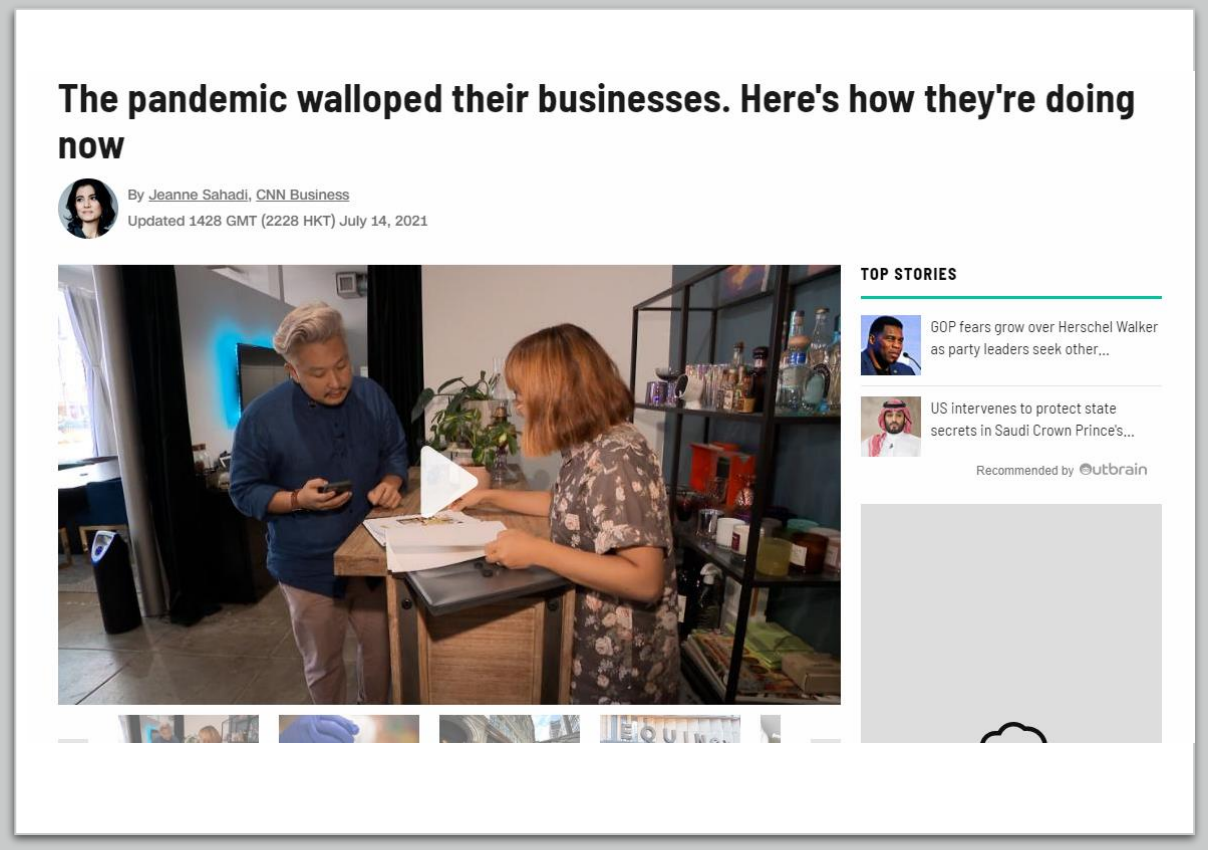
- Payment made to the firm by the government, it has the opposite effect of a tax.
- New subsidies or increased subsidies ->more profitable ->more supply -> supply curve shift rightwards.
- Elimination of subsidies or decreased subsidies -> less profitable ->less supply -> supply curve shift leftwards.

Non-price determinants of supply

9. ‘Shock” or sudden unpredictable events

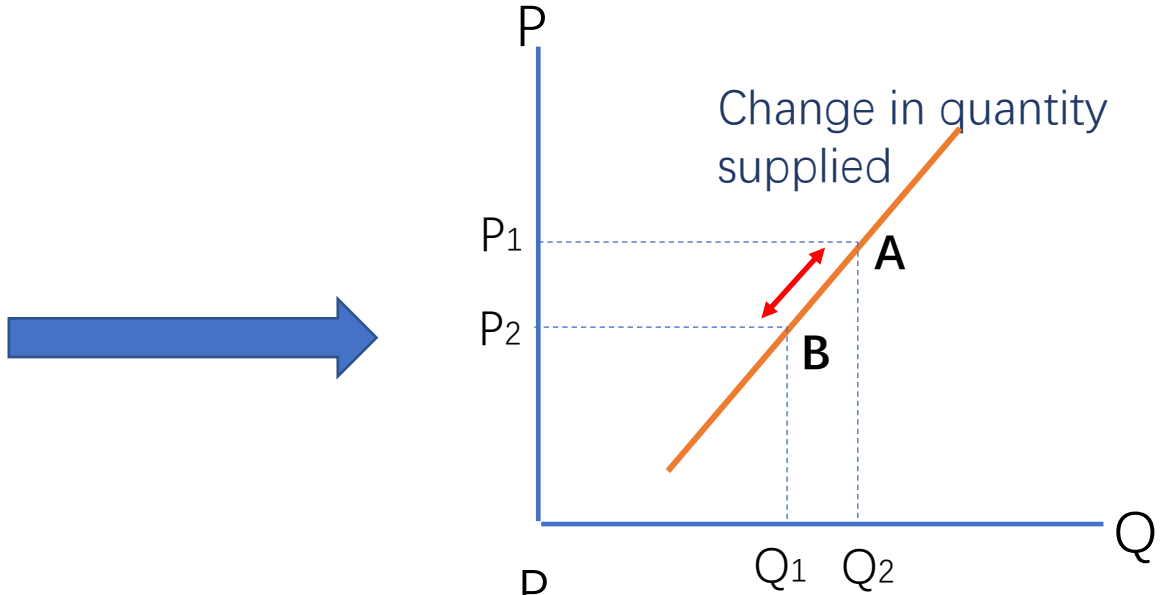
- Sudden, unpredictable events can affect supply



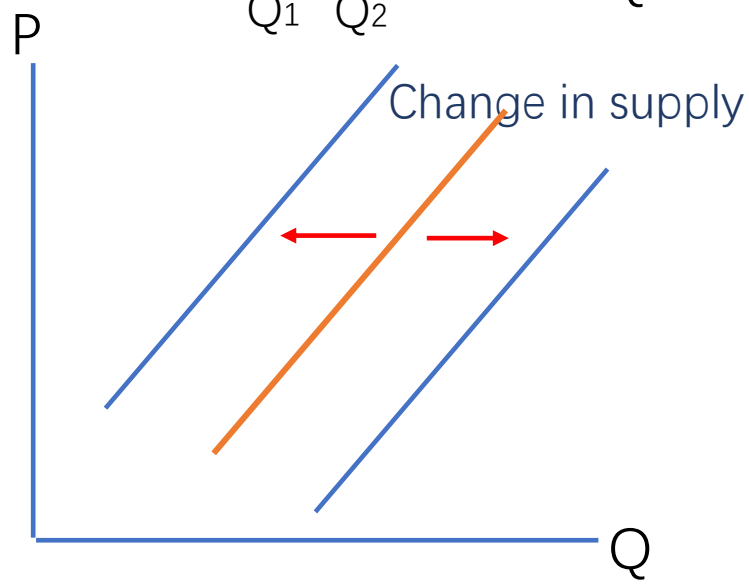


To sum up

- Any change in price produces a **change in quantity supplied**, shown as a movement on the supply curve.



- Any change in a non-price determinant of supply leads to a **change in supply**, shown as a shift of the entire supply curve.



Activity

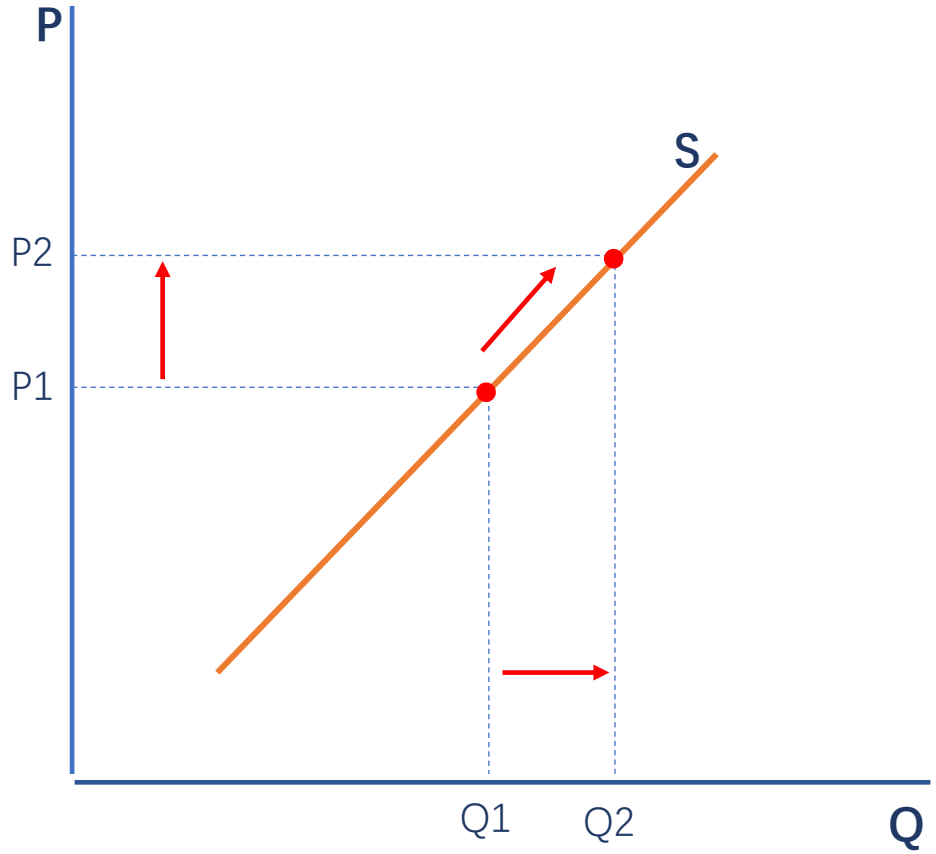
- Draw a supply curve of disposable mask. What impact will the following scenarios make to the supply curve? And why?

- In Covid-19 pandemic, the price of disposable mask goes up
- Due to sense of social responsibility and higher price, more firm joint the industry.
- Government give subsidies to support the industry
- After the Covid-19 pandemic, the demand for disposable mask is expected to decrease, so some firms who have the capability to produce other product switch to produce other products.

Activity answer

1) In Covid-19 pandemic, the price of disposable mask goes up

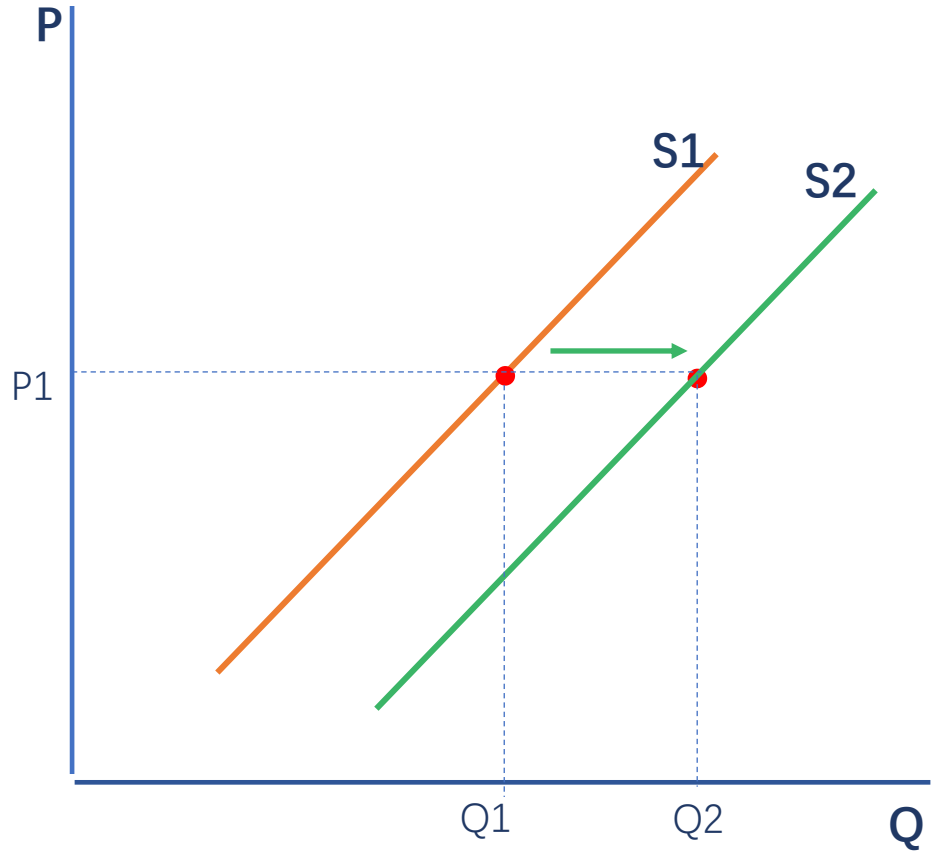
- When the price of the mask goes up, suppliers will be motivated to produce more.
- Price goes up from P1 to P2
- Quantity supplied from Q1 to Q2
- The supply curve does no move.



Activity answer

2) Due to sense of social responsibility and higher price, more firm joint the industry

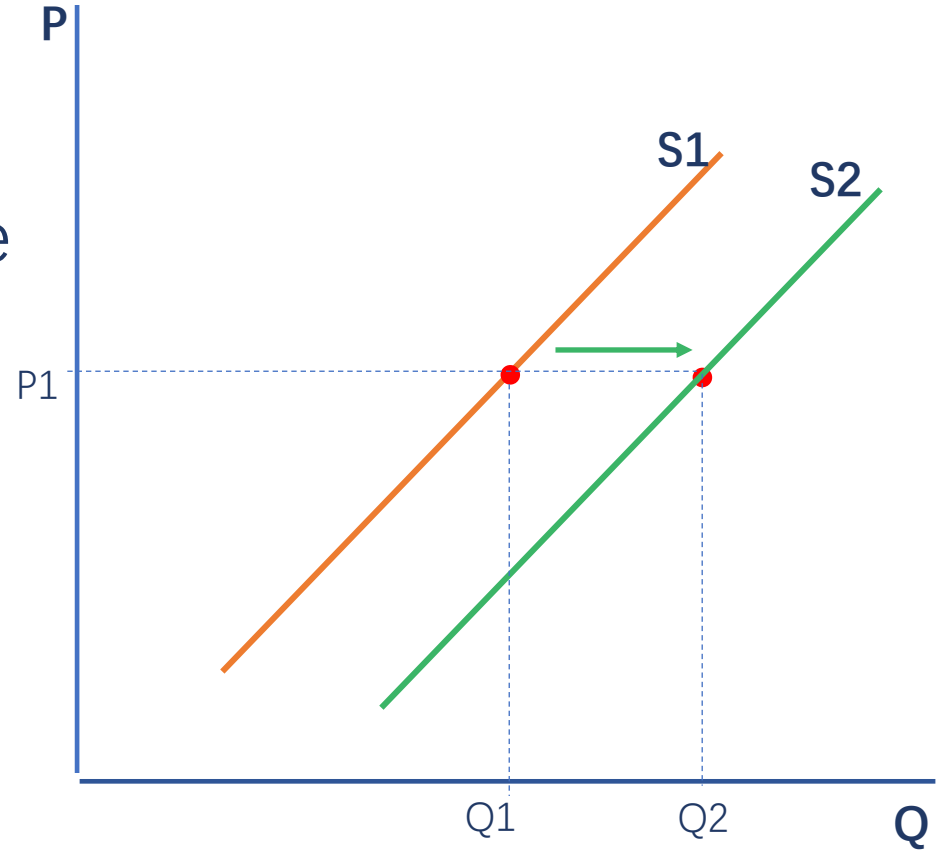
- More firm joint the industry, the total market supply will increase, the supply curve shift rightwards.



Activity answer

3) Government give subsidies to support the industry

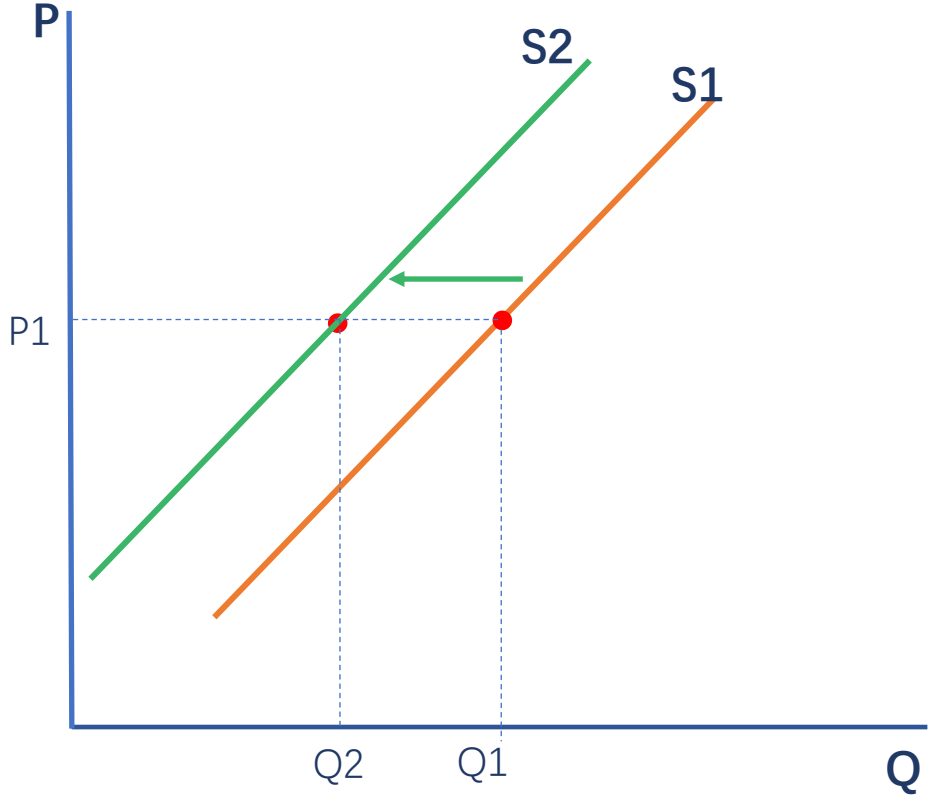
- Subsidies has the effect of decrease the total cost of production. Thus, it will encourage the supplier to produce more, the supply curve shift rightwards.



Activity answer

4) After the Covid-19 pandemic, the demand for disposable mask is expected to decrease, so some firms who have the capability to produce other product switch to produce more of other products.

- In this case, for those firm who have the capability to produce both disposable mask and other goods, these two goods are competitive supply.
- Disposable mask supply decrease, supply curve shift leftwards.




market equilibrium

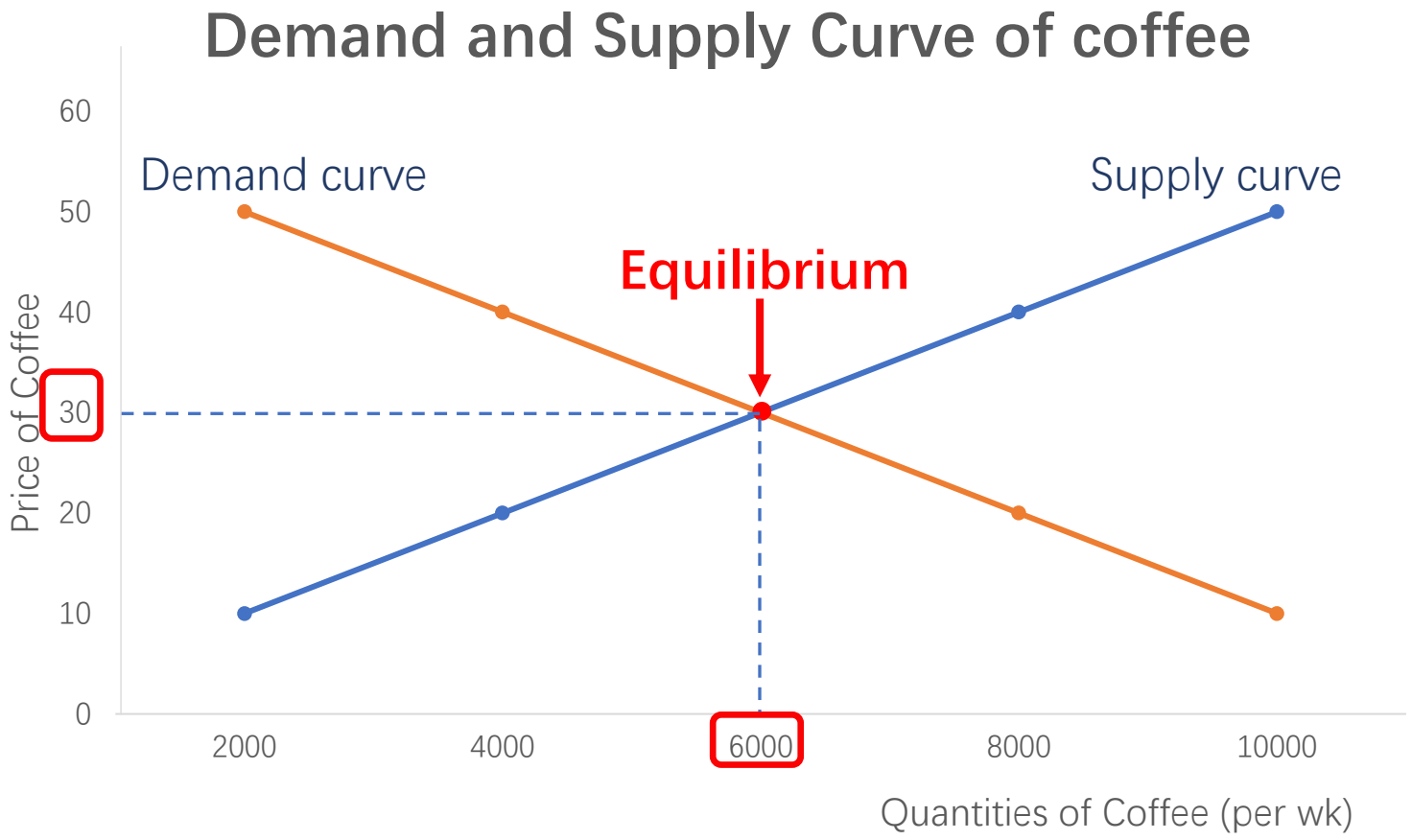
Consumers and producers are not living in parallel worlds, let’s put demand and supply together to see how they interact to determine what happen in the market.

Demand and supply

Put the demand and supply schedule for coffee together.

Demand and Supply schedule for coffee		
Price of Coffee	Quantity of Coffee demanded (per wk)	Quantity of Coffee supplied (per wk)
50	2000	10000
40	4000	8000
30	6000	6000
20	8000	4000
10	10000	2000

Market equilibrium



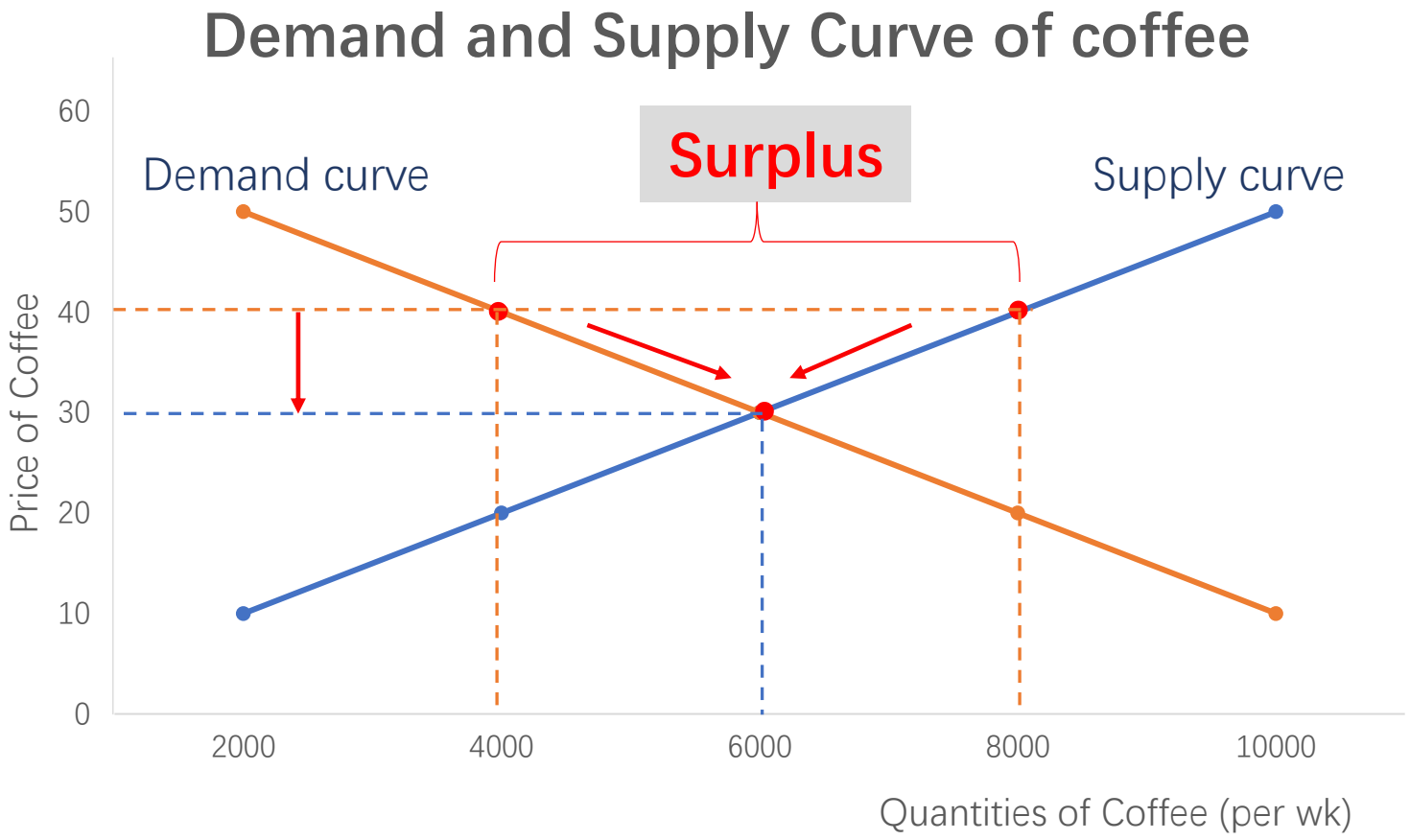
Equilibrium: A situation in which the market price has reached the level at which quantity supplied equals quantity demanded.

- There is no tendency for the price to change, ceteris paribus
- In this case,

  Equilibrium quantity=6000

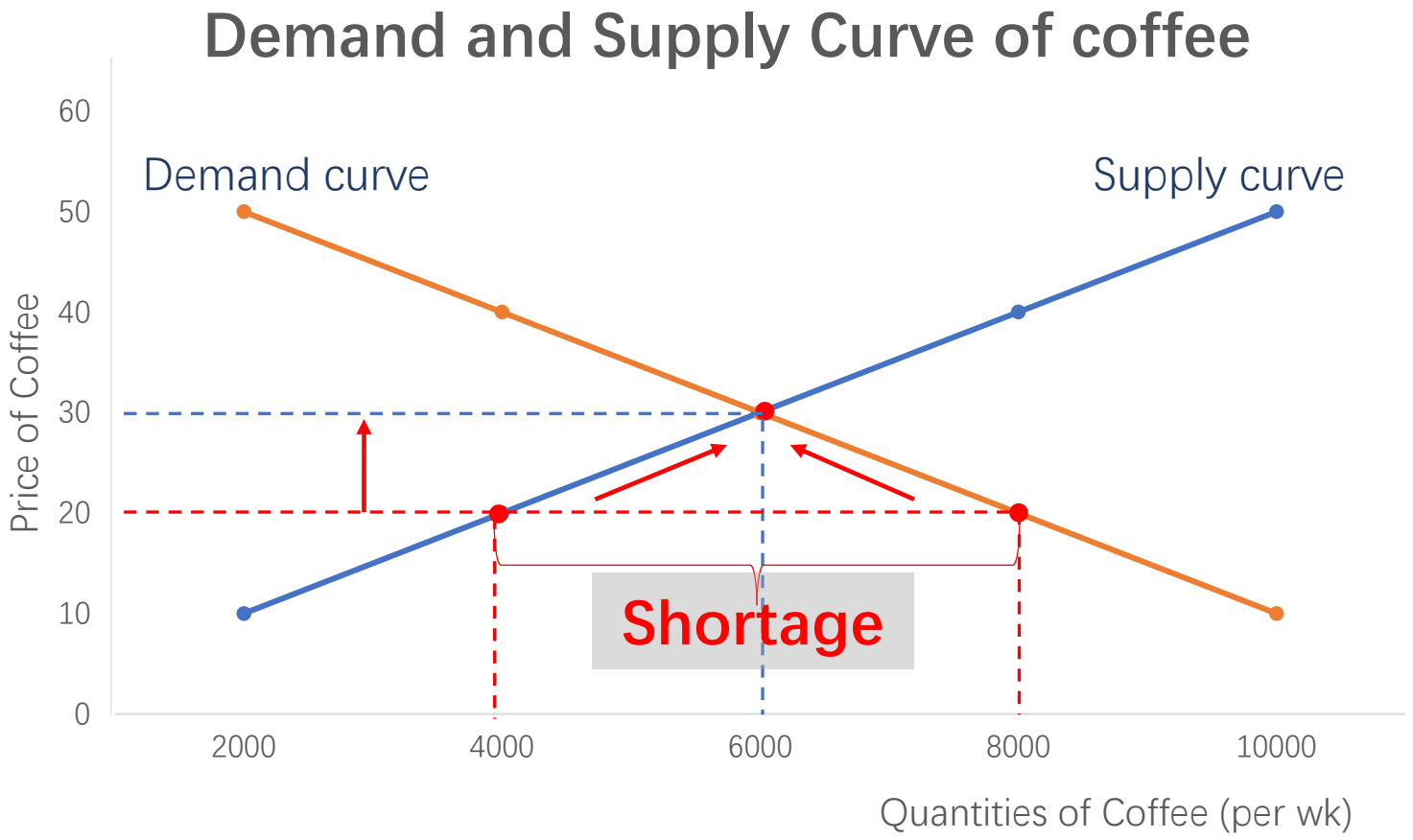
  Equilibrium price = 30
- We call it market-clearing price, or simply **market price**.

Surplus (Excess supply)



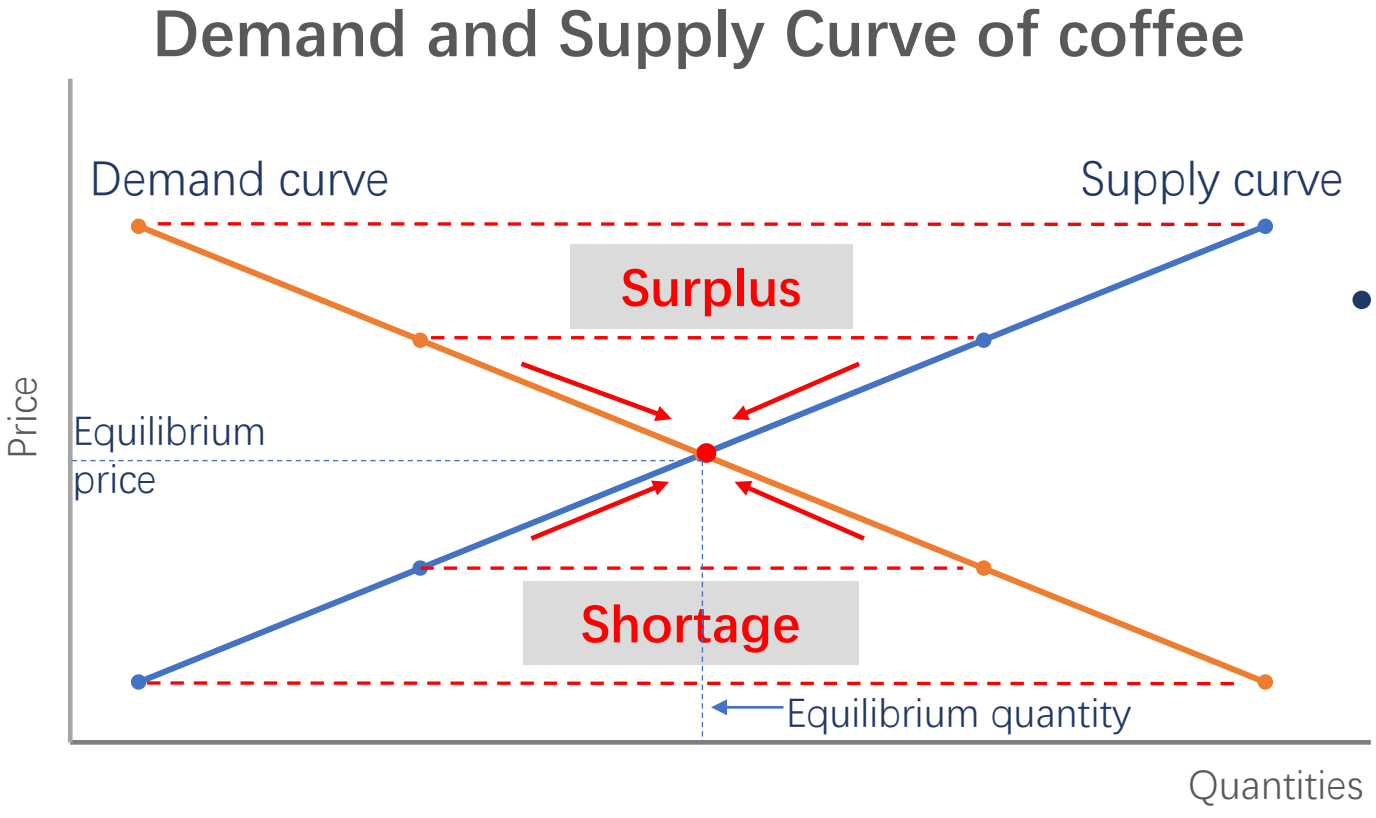
- Suppose At original price of 40, sellers are willing to supply 8000 cups of coffee, while buyers are only willing to buy 4000 cups.
- The gap of 4000 cups we call it **excess supply** or **surplus**.
- With unsold output of 4000 cups of coffee, seller will lower their price to encourage consumers to buy more, as the price fall, quantity supplied become smaller and quantity demanded become bigger. As long as there is a surplus, there will be a downwards pressure on the price.
- Finally, the price will fall to reach the point of equilibrium, the surplus is eliminated.

shortage (Excess demand)



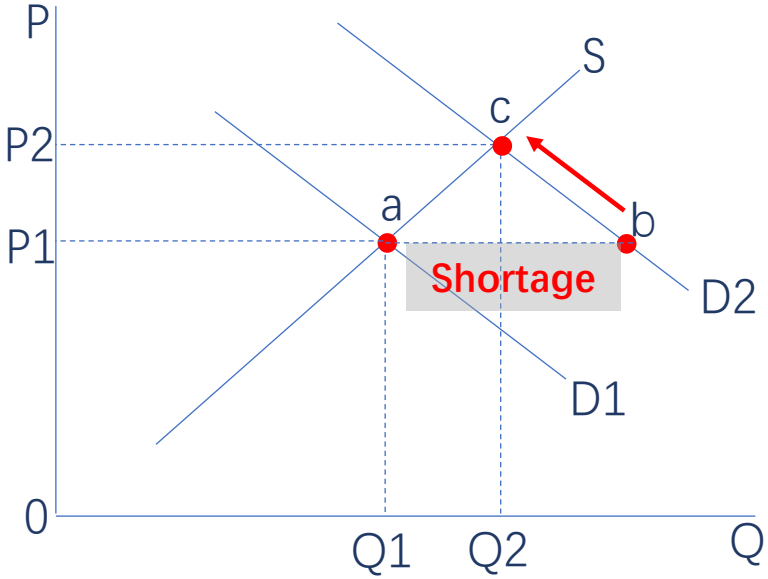
- If the original price for coffee is 20 per cup, quantity demanded 8000 is 4000 larger than the quantity supplied.
- This is called **excess demand** or a **shortage**.
- Sellers noticed that their coffees are quickly sold out, so they start to raise their price. As they do so, quantity demanded begins to fall and quantity supplied begin to raise. The shortage will lead to an upward pressure on price.
- Finally, the price will raise to reach the point of equilibrium, the shortage is eliminated.

To sum up



- When the market is in **equilibrium**, quantity demanded equals quantity supplied, and there is no tendency for the price to change.
- In the **market disequilibrium**, there is excess demand (Shortage) or excess supply (surplus), And the forces of demand and supply cause the price to change until the market reaches equilibrium.

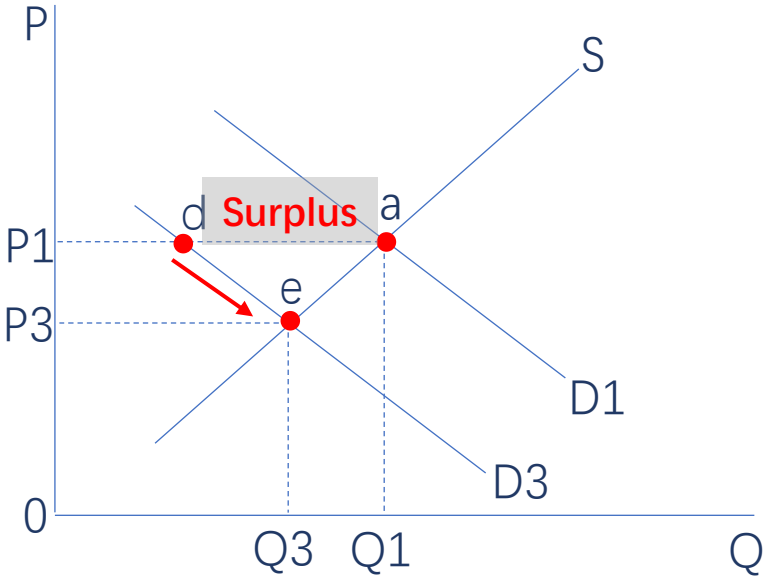
Effect of the non-price determinants of demand



- Initial equilibrium point a with P1 and Q1.
- A non-price determinant of demand (say higher income) shifts the demand curve from D1 to D2
- Given D2 at the initial price P1, a move to b, result in shortage (horizontal distance a to b).
- Point b represent disequilibrium, quantity demanded > quantity supplied
- → upward pressure on price, thus price increase to P2 in point c.
- New equilibrium at point c, with higher price P2 and greater quantity of Q2.

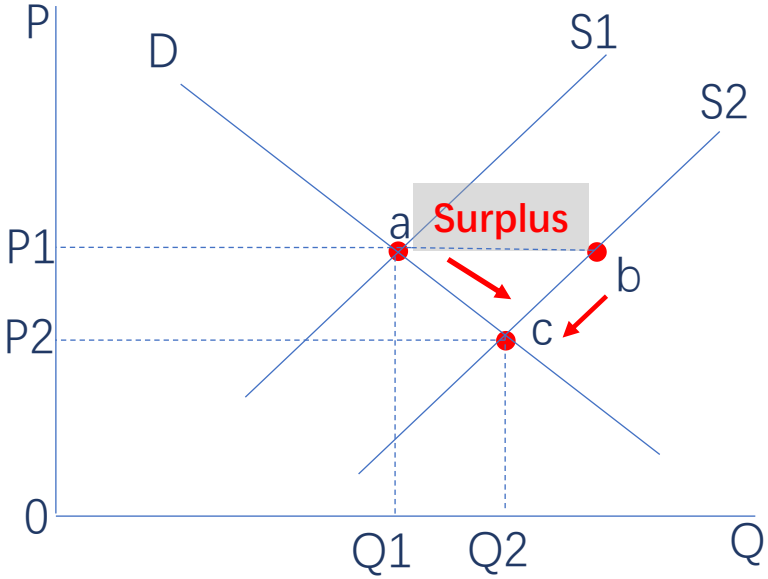
Effect of the non-price determinants of demand

- Initial equilibrium point a with P1 and Q1.
- Ice cream and yogurt are substitute products, so the falling price of ice cream will shift the demand curve from D1 to D3.
- Given D3 at the initial price P1, a move to d, result in surplus (horizontal distance a to d).



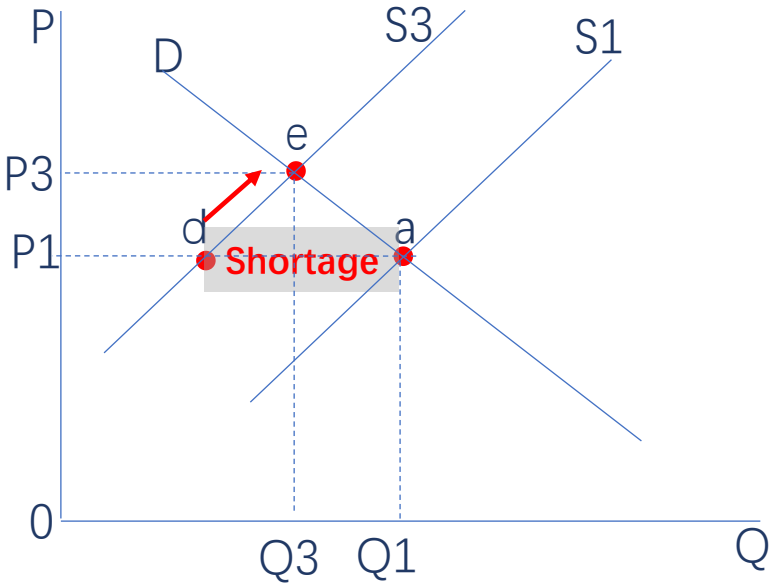
- At this disequilibrium d, quantity demanded < quantity supplied
- → downward pressure on price, thus price fall to P3 in point e.
- New equilibrium at point e, with lower price P3 and less quantity of Q3.

Effect of the non-price determinants of supply



- Initial equilibrium point a with P1 and Q1.
- A non-price determinant of supply (say more firms join the industry) shifts the supply curve from S1 to S2, Given S2 at the initial price P1, a move to b, result in surplus (horizontal distance a to b).
- Point b represent disequilibrium, quantity supplied > quantity demanded
- -> downward pressure on price, thus price fall to P2 in point c.
- New equilibrium at point c, with lower price P2 and greater quantity of Q2.

Effect of the non-price determinants of supply



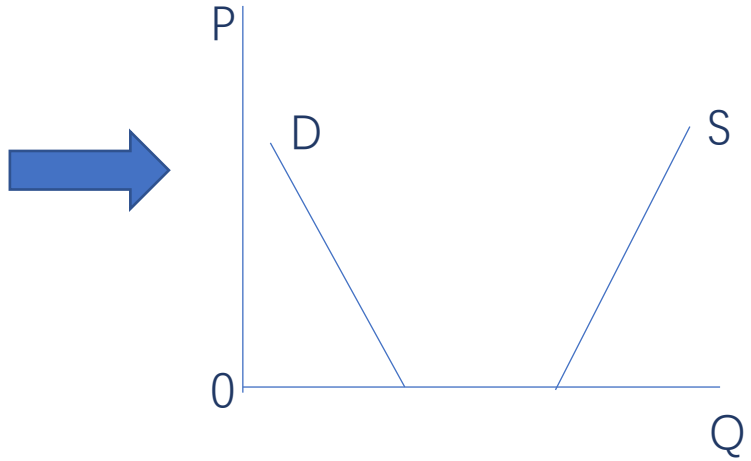
- Initial equilibrium point a with P1 and Q1.
- The swine fever infection result in massive death of pig, the supply of pork falls. It shifts the supply curve leftwards from S1 to S3
- Given S3 at the initial price P1, a move to d, result in shortage (horizontal distance a to d).

- Point b represent disequilibrium, quantity demanded > quantity supplied, consumer want to buy porks but supplier don't have enough porks.
- → Upward pressure on price, thus price increase to P3 in point e.
- New equilibrium at point e, with higher price P3 and less quantity of Q3.

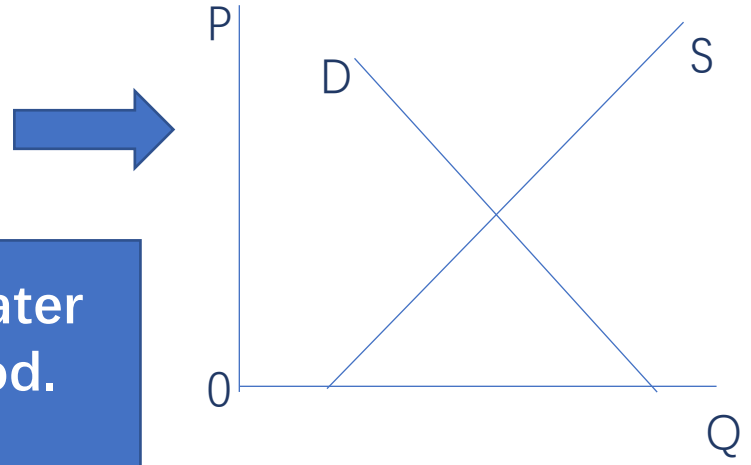
Revisit：Free and economic goods

- Let's use the demand and supply curve to compare these two goods:

- Free goods: a good for which the quantity supplied is greater than the quantity demanded when the price is zero.
- there is excess quantity supplied even at a zero price.



- Economic goods: a good for which quantity supplied is smaller than quantity demanded when the price is zero.



When demand and supply intersect at a price greater than zero, the good has become an economic good. (result of reduced supply or increased demand)

KEY POINT! - Demand, Supply & equilibrium

1. **Check your labels!** (vertical/horizontal axis, all the curve, specific P and Q in axis)
2. **Check your units(单位)!** - units, currency, thousands, millions, billions, etc.
3. The relationship between Price and Quantity:
   - the **Δ of P** leads to the **Δ of Q**
   - When **price increase/decrease**,
     →increase/decrease **in quantities demanded/supplied**
   - When **S/D curve shift leftward/rightwards(non-price determinants)**
     → increase/decrease **in demand/supply**