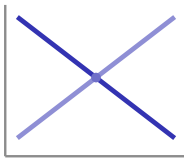


The Price System

A-Level Economics ■ Topic 2

A-Level Economics



What we will cover

- 1 Demand & marginal utility
- 2 Supply
- 3 Price elasticity (PED)
- 4 YED, XED & PES
- 5 Market equilibrium
- 6 Consumer & producer surplus



buyers & sellers meet

1

Demand and supply

Demand and what shifts it

Law of demand 需求定律: price up $\Rightarrow$ quantity down, so the curve slopes down.

- own price $\rightarrow$ *move along*
- **income** 收入, **substitute** 替代品 & **complement** 互补品 prices, tastes $\rightarrow$ *shift*

Demand and supply: the definitions that matter

demand 需求

the quantity buyers are **willing and able** to buy at each **price** 价格 in a period of time – not just a wish

market demand 市场需求

add up the quantity *all consumers* 消费者 want at each price – horizontal summation of the individual **demand curves** 需求曲线

supply 供给

the quantity **producers** 生产者 are willing and able to *sell* at each price in a period

movement

a change in the good's **own price** moves you *along* the curve

shift

a change in any **determinant** 决定因素 moves the **whole curve**

“Willing *and able*” is the phrase: wanting a Ferrari is not demand. Every definition question here is marked on those three words.

The two laws, and the words they use

The law of demand

When the price rises, the **quantity demanded** 需求量 falls; when the price falls, it rises. A movement *along* the curve.

The law of supply

When the price rises, the **quantity supplied** 供给量 rises – higher prices make extra output worth producing.

Individual and market

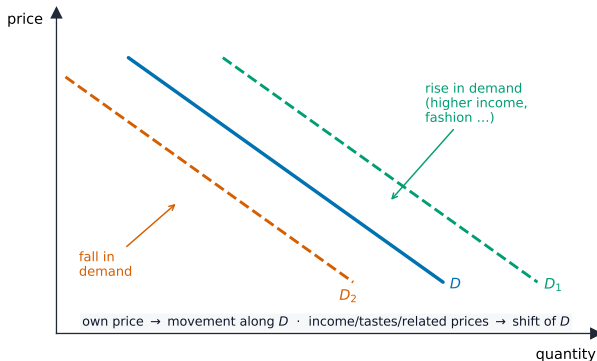
Market supply 市场供给 is the horizontal sum of every firm's supply, and market demand the sum of every buyer's.

Where this happens

In **product markets** 产品市场, demand and supply set the price of goods and services; in factor markets, of labour and capital.

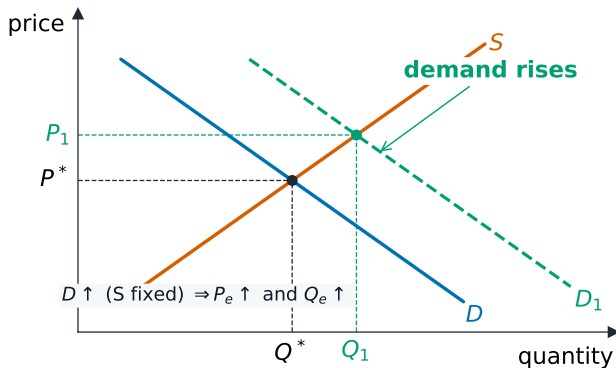
A price change moves you *along* a curve; anything else – one of the **determinants** 决定因素 – shifts it. Half the marks in this topic are in that distinction.

Demand and what shifts it, in detail



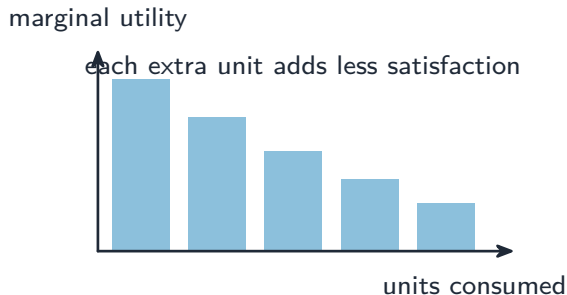
A change in income, tastes or related prices shifts the whole curve (D_1 right, D_2 left); a change in the good's own price is a movement along it.

With supply fixed



With supply fixed, a rise in demand ($D \rightarrow D_1$) raises both the equilibrium price and the equilibrium quantity.

Marginal utility



Diminishing marginal utility 边际效用递减: each extra unit adds **less** satisfaction than the last.

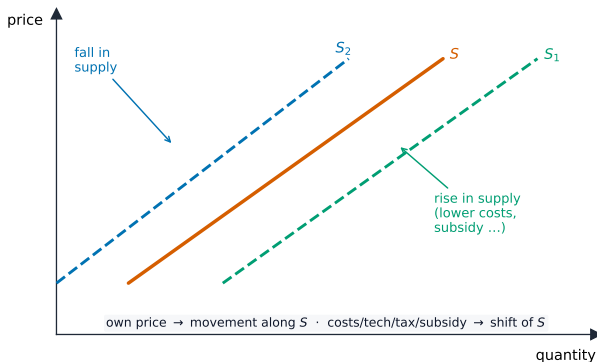
Because later units are worth less, buyers pay less for them – so demand slopes **downward**.

Supply and what shifts it

Law of supply 供给定律: price up $\Rightarrow$ quantity up (more profit), so the curve slopes up.

- lower **costs** 生产成本, better tech, a **subsidy** 补贴 $\rightarrow$ shift right
- higher costs or an indirect tax $\rightarrow$ shift left

Supply and what shifts it, in detail



Lower costs, better technology or a subsidy shift supply right (S_1); higher costs or a tax shift it left (S_2).

What shifts the supply curve

costs of production 生产成本

wages, raw materials, energy – higher costs shift supply **left**

technology

better technology lowers cost per unit and shifts supply **right**

taxes and subsidies

an indirect tax shifts supply left; a subsidy shifts it right

the number of firms 企业

more firms in the market means more supply at every price

weather

for farm goods, the single largest short-run shifter

expectations

if producers expect a higher price later, they supply less now

Anything except the good's **own price** shifts the curve. If the question changes the price, you move along it instead.

2

Elasticity

Price elasticity of demand

$$\text{PED} = \frac{\% \Delta \text{quantity}}{\% \Delta \text{price}}$$

> 1 **elastic** 富有弹性 (responds a lot); < 1 **inelastic** 缺乏弹性 (responds little).

Worked example

price +10%, quantity -25% $\Rightarrow$ PED = -2.5 (elastic)

Reading a PED value

$$PED = 0$$

perfectly inelastic – quantity does not respond at all

$$0 < |PED| < 1$$

inelastic – quantity changes *less* than price, in percentage terms

$$|PED| = 1$$

unit elastic – they change in the same proportion

$$|PED| > 1$$

elastic – quantity changes *more* than price

$$|PED| = \infty$$

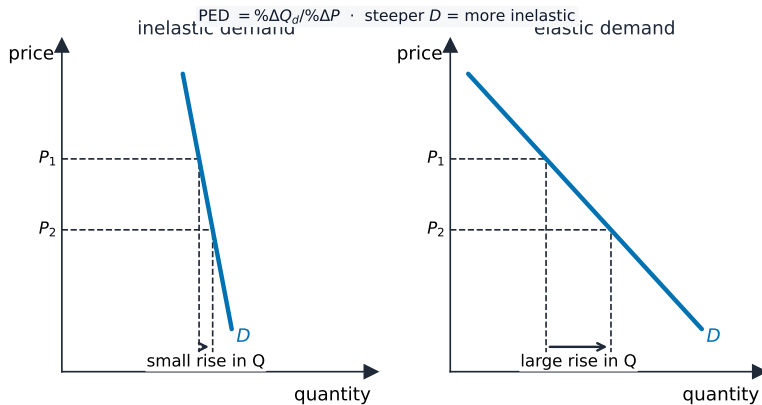
perfectly elastic – any price rise loses every buyer

the formula

$$\frac{\% \Delta Q_d}{\% \Delta P}, \text{ and it is negative for a normal good}$$

Compare the **percentage** changes, never the absolute ones. And quote the sign or say you are using the magnitude – both are marked.

Price elasticity of demand, in detail



Worked example price +10%, quantity -25% $\Rightarrow$ $PED = -2.5$ (elastic)

PED and total revenue



Total revenue 总收益

= price $\times$ quantity.

- **inelastic:** raise price $\rightarrow$ TR rises
- **elastic:** raise price $\rightarrow$ TR falls

A tax on an inelastic good (petrol) raises a lot of revenue without cutting sales much.

What PED tells a firm about its revenue

total revenue 总收益

$$TR = \text{price} \times \text{quantity}$$

demand inelastic

raise the price and TR **rises** – quantity falls by proportionally less

demand elastic

raise the price and TR **falls** – quantity falls by proportionally more

unit elastic

TR is unchanged, and it is at its maximum

what makes demand in-elastic

few substitutes, a small share of income, a necessity, a short time period, and **habit or addiction**

This is why a tobacco tax raises revenue and a tax on one brand of coffee does not. **Substitutes** are the dominant determinant.

Who uses an elasticity, and for what

A firm

PED says whether cutting the price will raise or lower total revenue – the single most useful number in a pricing decision.

A government

Governments 政府 tax inelastic goods – petrol, tobacco – because the revenue holds up while sales barely fall.

The same fact, two readings

For the firm, inelastic demand is pricing power; for the taxed consumer, it is the reason the burden lands on them.

Tax incidence follows elasticity: the more inelastic side of the market pays the larger share of any tax.

Income and cross elasticity

YED 需求收入弹性

normal good: income
up → demand up (+)

inferior good: income up
→ demand down (-)

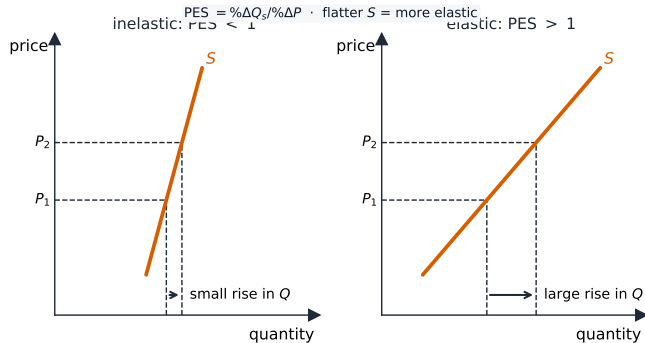
XED 需求交叉弹性

substitutes 替代品: +
(rival dearer → buy more)

complements 互补品: -
(partner dearer → buy less)

Restaurant meals: $YED = +30\%/+20\% = +1.5$ (normal, luxury). Tea → coffee: $XED = +0.4$ (substitutes).

Income and cross elasticity, in detail



The same price rise: a small supply response when PES is below 1, a large one when PES is above

Price elasticity of supply

$$\text{PES} = \frac{\% \Delta \text{supplied}}{\% \Delta \text{price}}$$

more elastic with
spare capacity 闲置产能 & **stocks** 库存

momentary 瞬时
PES = 0

→ **short run** 短期
rises a little

→ **long run** 长期
most elastic

What makes supply elastic

spare capacity 闲置产能

unused machines and workers, so firms can quickly make more

stocks 库存

goods already in a warehouse that can be sold fast

factor mobility

how easily land, labour and capital can move into the industry

time – momentary

supply is fixed; nothing can be changed

time – short run

at least one factor is fixed, so supply is inelastic

time – long run

all factors are variable, so supply is far more elastic

Time is the master determinant: almost every supply becomes elastic given long enough, which is why the exam always asks over what period.

3

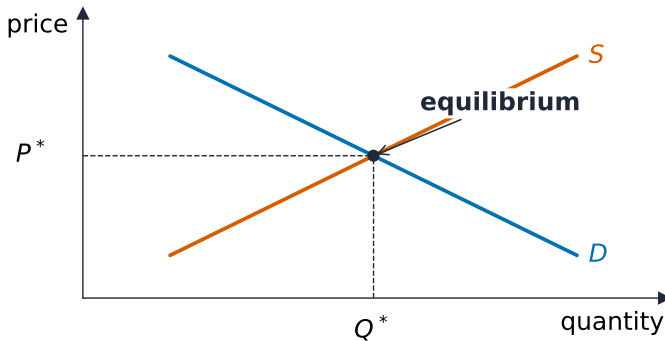
Equilibrium and surplus

Market equilibrium

Equilibrium 均衡: where demand meets supply – no pressure to change.

- price too low → **shortage** 短缺 → price pushed up
- price too high → **excess supply** 超额供给 → price pushed down

Market equilibrium, in detail



equilibrium: $Q_d = Q_s$ at (P^*, Q^*) (market clears)

At the equilibrium price $\hat{P}$

The same analysis, in four different markets

goods and services

demand and supply set the price of a product

factor markets 要素市场

the demand for and supply of **labour** set the wage

the money market

demand for and supply of loanable funds set the **interest rate**

the foreign exchange market 外汇市场

demand for and supply of a currency set the **exchange rate 汇率** – the price of one currency in another

the point

one diagram, four contexts – only the axis labels change

When a question moves to a market you have not seen, redraw the same diagram with the new labels. The mechanism does not change.

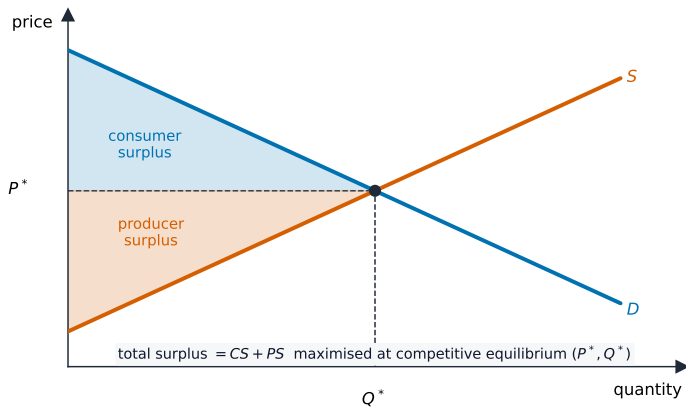
Shifts and surplus

A demand rise lifts both price & quantity; a supply rise cuts price, lifts quantity.

- **consumer surplus** 消费者剩余 – below demand, above price
- **producer surplus** 生产者剩余 – above supply, below price

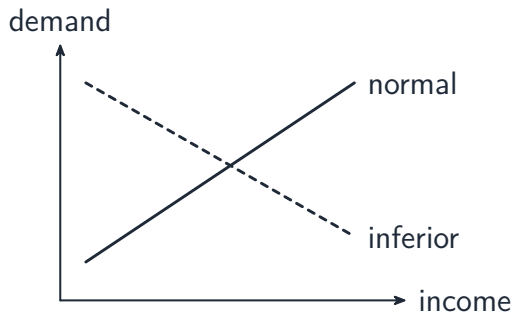
Their sum is total **welfare** 福利, largest at equilibrium.

Shifts and surplus, in detail



A demand rise lifts both price & quantity; a supply rise cuts price, lifts quantity.

Income elasticity of demand

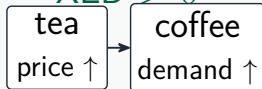


As income rises, demand for a normal good rises but an inferior good falls

Cross elasticity of demand

substitutes

$$XED > 0$$

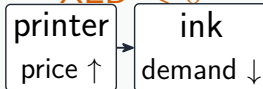


tea +10%, coffee +4%:

$$XED = +0.4$$

complements

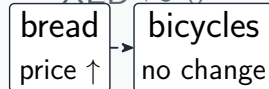
$$XED < 0$$



used together, so both
are bought less

unrelated

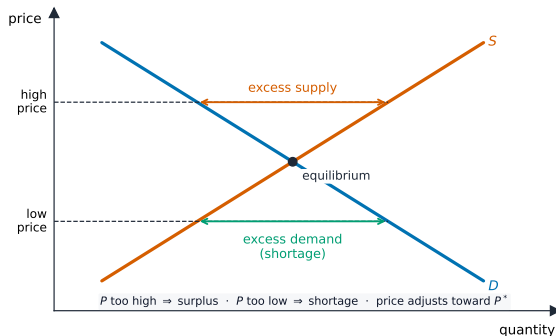
$$XED \approx 0$$



one price says nothing
about the other good

The sign of XED: positive for substitutes, negative for complements, about zero for unrelated goods

Disequilibrium



Above the equilibrium price there is excess supply; below it there is excess demand (a shortage). Either way the price is pushed back to equilibrium.

The price mechanism doing its three jobs

excess supply

price is **above** equilibrium: unsold stock builds, so sellers cut the price

excess demand

price is **below** it: queues and shortages appear, so buyers bid the price up

signalling

the price tells producers and consumers where resources are wanted

rationing

a higher price allocates a scarce good to those willing to pay most

incentive

a higher price rewards producers for supplying more

In both cases price returns to equilibrium *by itself*. The three jobs are what any question about a shortage or a glut is really asking you to name.

Exam tips

- Quote the **elasticity formula** and interpret the value: PED inelastic (< 1), elastic (> 1); link PED to total revenue.
- Distinguish a **movement along** (a price change) from a **shift** (a non-price factor) of demand or supply.
- Use the **sign** of XED (substitutes +, complements $-$) and YED (normal +, inferior $-$).
- On a diagram, label **consumer and producer surplus** and show how a price change alters each.

4

Recap

Topic 2 – key takeaways

1

Demand & supply

own price moves along; other causes shift

2

PED

> 1 elastic, < 1 inelastic; drives revenue

3

YED & XED

normal/inferior;
substitutes/complements

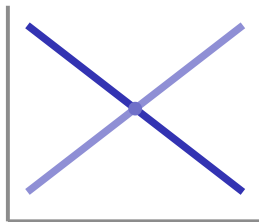
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Equilibrium

D meets S; surplus measures welfare

Check yourself

- 1 A subsidy shifts supply which way?
- 2 If $PED = 0.4$, is demand elastic or inelastic?
- 3 An inferior good has YED of what sign?
- 4 Where is total welfare largest?



Answers 1. right (supply rises) 2. inelastic 3. negative 4. at the free-market equilibrium