

The allocation of resources

IGCSE Economics

Markets and the price mechanism

Economics is split into two parts:

- **microeconomics** 微观经济学—the study of single parts of the economy, such as one industry or one product.
- **macroeconomics** 宏观经济学—the study of the whole economy, like total jobs, prices, and growth.

A **market** 市场 is any place or system where buyers and sellers meet to trade. It does not need a building—it can be online or over the phone.



A stock exchange is a market: as buyers and sellers trade, their offers set the price of each share

Image: Carol M. Highsmith, Public domain (commons.wikimedia.org)

When a market is free, no one is in charge of deciding what to make. Instead, the **price mechanism** 价格机制 (the free movement of prices) **allocates** 配置 **resources** 资源—it decides what is made, how, and for whom. Price does three jobs:

- the **signalling** 信号 function —a price change tells buyers and sellers what is happening. A rising price signals "make more"; a falling price signals "make less".
- the **incentive** 激励 function —a higher price gives **firms** 企业 a reason to produce more, because they can earn more.
- the **rationing** 配给 function —when a product is scarce, its price rises. The high price shares out the limited amount to those willing to pay.

Demand

Demand 需求 is the amount of a **good** 物品 that **consumers** 消费者 (buyers) are willing and able to buy at each price, in a period of time.

The **law of demand** 需求定律 says: when the price of a good rises, the quantity demanded falls; when the price falls, the quantity demanded rises. Price and quantity move in opposite directions —an **inverse relationship** 反向关系. This is true **ceteris paribus** 其他条件不变 (a Latin phrase meaning "all other things stay the same").

Movements and shifts

It helps to separate two ideas:

- **quantity demanded** 需求量—the amount bought *at one price*.
- **demand** —the whole pattern of buying at every price.

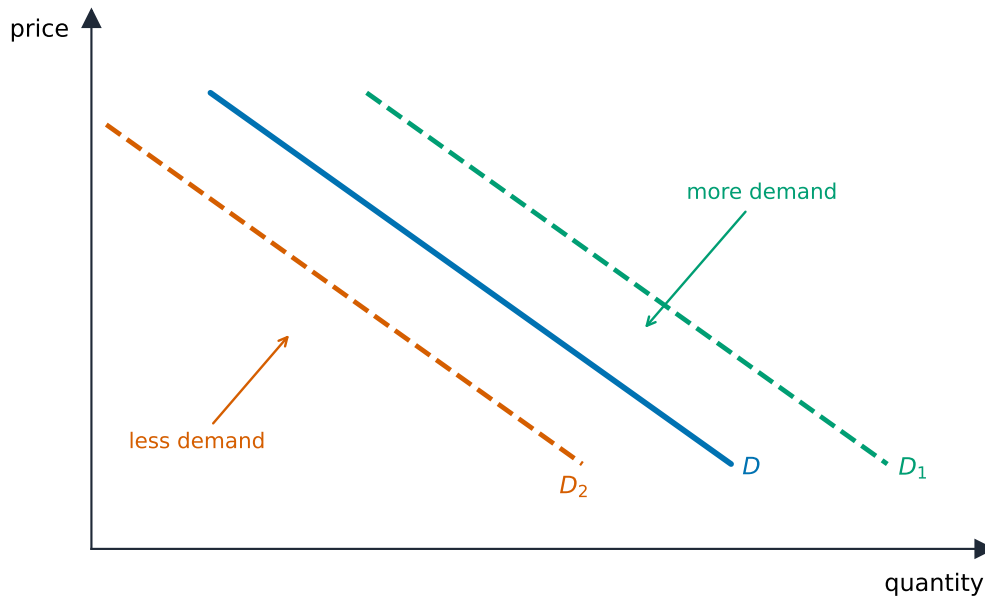
On a demand diagram, price is on the up axis and quantity on the across axis. The **demand curve** 需求曲线 slopes downward from left to right: high price, low quantity; low price, high quantity.

- A change in the good's **own price** causes a **movement along** the demand curve. You slide to a new point on the *same* line.
- A change in any other condition causes a **shift** 移动 of the whole curve. A rightward shift means more is demanded at every price; a leftward shift means less.

Conditions of demand

These are the things (other than the good's own price) that shift the demand curve:

- **income** 收入—more income usually means more demand.
- **tastes** 偏好—if a good becomes popular, demand rises.
- price of **substitutes** 替代品—goods used *instead* of each other (tea and coffee). If coffee gets dearer, demand for tea rises.
- price of **complements** 互补品—goods used *together* (cars and fuel). If cars get dearer, demand for fuel falls.
- **population** 人口—more people means more demand.
- **advertising** 广告—good adverts raise demand.



The demand curve slopes down. A change in income, tastes, population or related prices shifts the whole curve; a change in the good's own price is a movement along it.

Supply

Supply 供给 is the amount of a good that firms are willing and able to sell at each price, in a period of time.

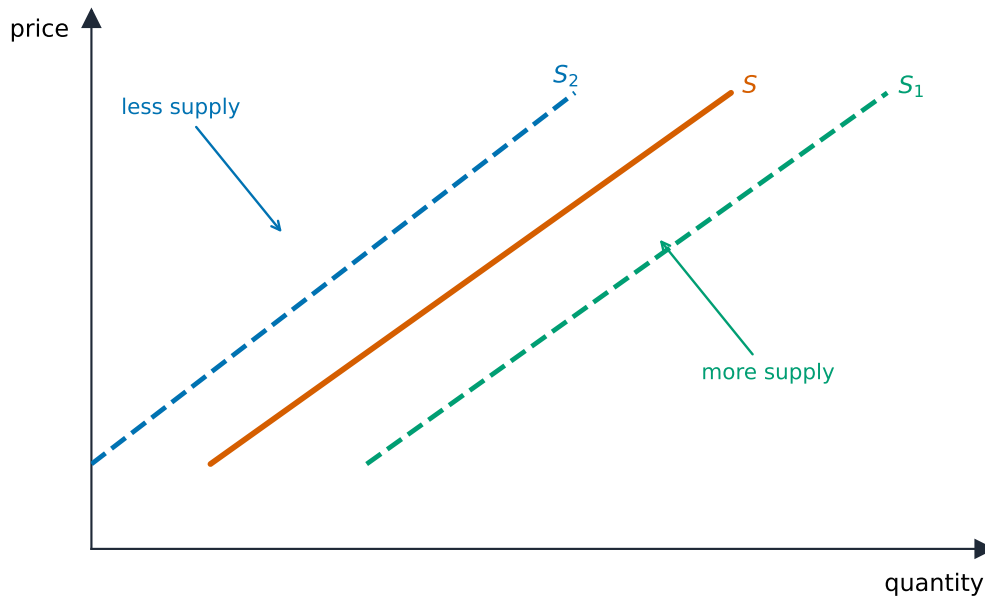
The **law of supply** 供给定律 says: when the price rises, the quantity supplied rises too. Price and quantity move the same way — a **direct relationship** 正向关系. Firms supply more at a high price because they can earn more.

Movements and shifts

- **quantity supplied** 供给量—the amount offered *at one price*.
- The **supply curve** 供给曲线 slopes upward from left to right.
- A change in the good's own price → a movement along the curve.
- A change in any other condition → a shift of the whole curve.

Conditions of supply

- **costs of production** 生产成本—if costs rise, firms supply less (curve shifts left).
- **technology** 技术—better technology lowers costs, so supply rises.
- **taxes** and subsidies —a **tax** 税收 on a good raises firms' costs (supply falls); a **subsidy** 补贴 (money from the government) lowers costs (supply rises).
- **weather** —important for farm goods.
- **number of firms** —more firms means more supply.



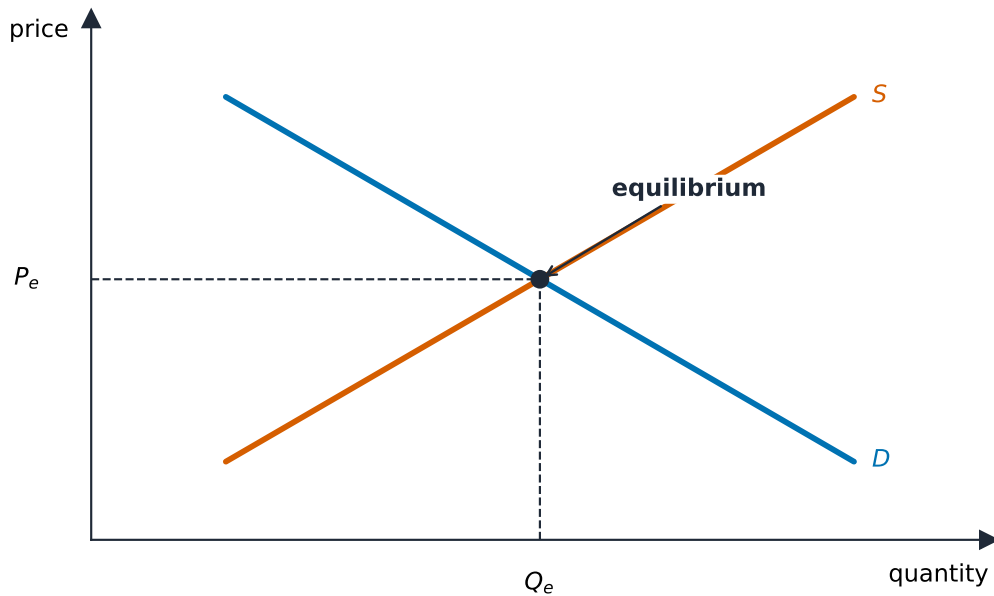
The supply curve slopes up. Lower costs, better technology or a subsidy shift it right; higher costs or a tax shift it left.

Price determination

The price of a good is set where demand and supply meet. Draw both curves on one diagram. They cross at a single point. This point gives:

- the **equilibrium** 均衡 price —the price where the amount buyers want to buy exactly equals the amount firms want to sell.
- the equilibrium quantity —the amount traded at that price.

At equilibrium, quantity demanded equals quantity supplied. There is no good left over and no buyer left waiting.



The price settles where the demand and supply curves cross —the equilibrium price P_e and quantity Q_e .

Price changes

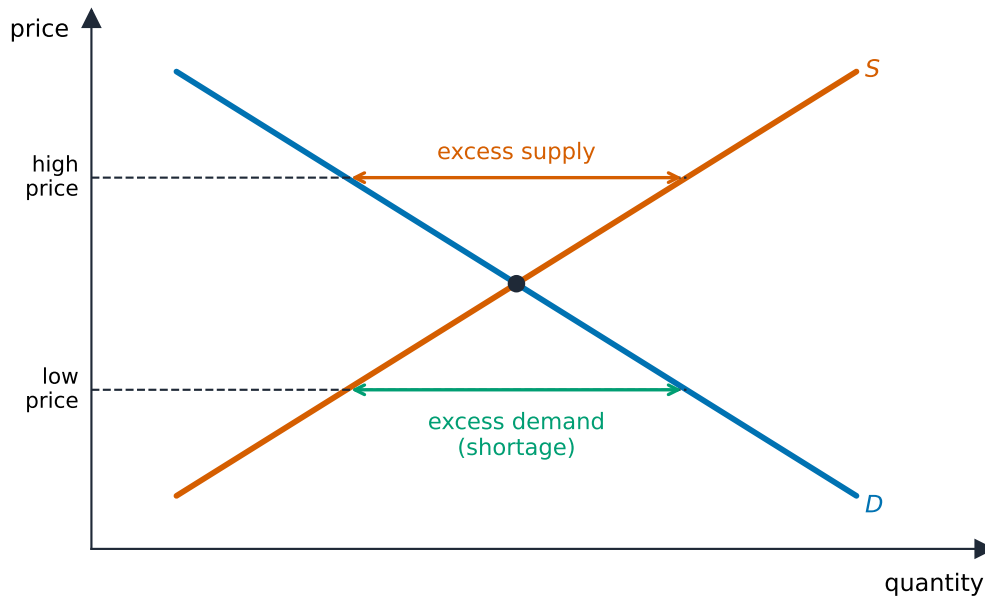
When a curve shifts, the crossing point moves, so price and quantity change:

- Demand rises (shifts right): price rises and quantity rises.
- Demand falls (shifts left): price falls and quantity falls.
- Supply rises (shifts right): price falls and quantity rises.
- Supply falls (shifts left): price rises and quantity falls.

Disequilibrium

If the price is *not* at equilibrium, the market is in **disequilibrium** 非均衡:

- If price is **below** equilibrium, buyers want more than firms supply. This is **excess demand** 超额需求, also called a **shortage** 短缺. Buyers compete, so the price is pushed up until equilibrium returns.
- If price is **above** equilibrium, firms supply more than buyers want. This is **excess supply** 超额供给, also called a **surplus** 过剩. Sellers cut the price until equilibrium returns.



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.

Price elasticity of demand (PED)

Price elasticity of demand 需求价格弹性 measures how much the quantity demanded changes when the price changes.

$$\text{PED} = (\% \text{ change in quantity demanded}) \div (\% \text{ change in price})$$

(We usually ignore the minus sign and read the size of the number.) The **determinants** 决定因素 (the things that decide PED) include whether the good has close substitutes, whether it is a need or a luxury, and what share of income it takes.

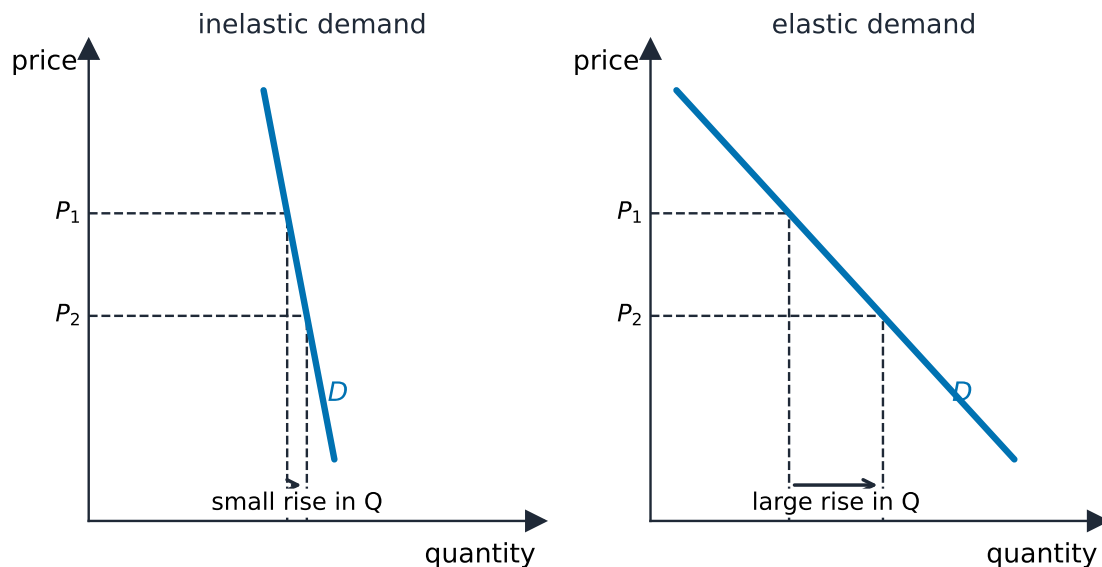
Worked example. When the price of a good rises by 20%, the quantity demanded falls by 10%. Find the PED.

$$\text{PED} = (\% \text{ change in quantity demanded}) \div (\% \text{ change in price}) = 10 \div 20 = 0.5.$$

Because 0.5 is less than 1, demand is inelastic —the quantity changed by a smaller percentage than the price.

Reading the value

- PED greater than 1: demand is **elastic** 富有弹性. Quantity changes by a large %. (Goods with many substitutes, like one brand of crisps.)
- PED less than 1: demand is **inelastic** 缺乏弹性. Quantity changes by a small %. (Needs with few substitutes, like petrol or salt.)
- PED equal to 1: **unit elastic** 单位弹性. Quantity changes by the same % as price.



When demand is inelastic (steep) a price change barely changes quantity; when it is elastic (shallow) the same change moves quantity a lot.

PED and total revenue

Total revenue 总收益 is the money a firm gets from sales: price $\times$ quantity sold. (To the buyer, the same money is **total expenditure** 总支出.) PED tells a firm what happens to revenue if it changes its price:

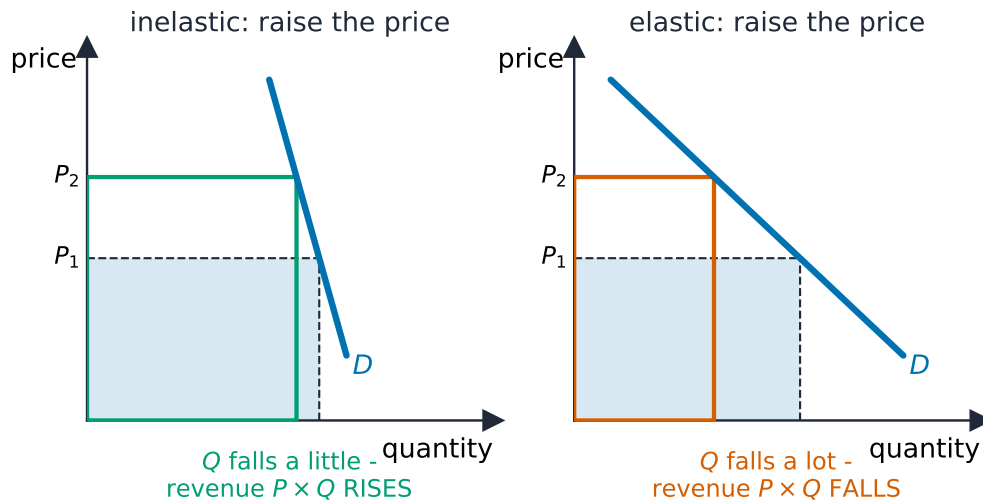
- If demand is inelastic, raising the price *raises* total revenue (quantity falls only a little).
- If demand is elastic, raising the price *lowers* total revenue (quantity falls a lot).

This is useful. A firm sets prices knowing how buyers will react. A government taxes inelastic goods (like cigarettes) because people keep buying them, so the tax raises a lot of money.

Worked example. A bus company sells 1,000 tickets a day at £2 each. It raises the price by 10% to £2.20, and daily sales fall by 5% to 950. Find the PED and what happens to total revenue.

- $PED = 5 \div 10 = 0.5$, so demand is inelastic (less than 1).
- old revenue = $£2 \times 1,000 = £2,000$.
- new revenue = $£2.20 \times 950 = £2,090$.

Total revenue rose by £90. Because demand is inelastic, the price rose by a bigger percentage than the quantity fell, so raising the price raised revenue.



The same price rise raises revenue when demand is inelastic, but lowers it when demand is elastic

Price elasticity of supply (PES)

Price elasticity of supply 供给价格弹性 measures how much the quantity supplied changes when the price changes.

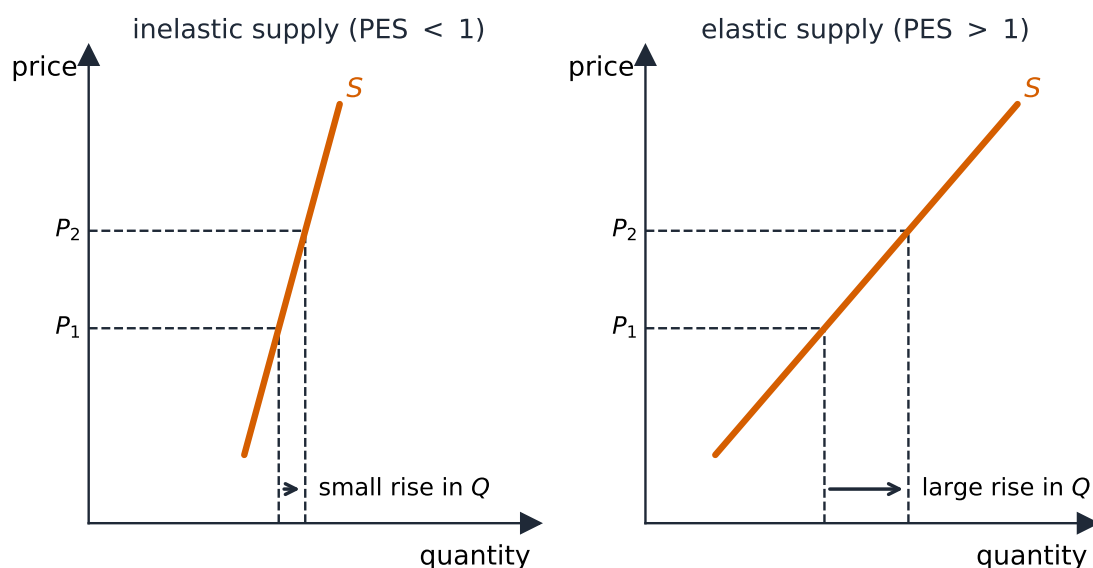
$$PES = (\% \text{ change in quantity supplied}) \div (\% \text{ change in price})$$

Supply is elastic if PES is greater than 1, and inelastic if PES is less than 1.

Worked example. When the price of a good rises by 10%, the quantity supplied rises by 30%. Find the PES.

$$PES = (\% \text{ change in quantity supplied}) \div (\% \text{ change in price}) = 30 \div 10 = 3.$$

Because 3 is greater than 1, supply is elastic.



The same price rise: a small quantity response when supply is inelastic, a large one when it is elastic

The determinants of PES are:

- **time** —supply is more elastic over a long time, because firms can change how much they make.
- **spare capacity** 闲置产能—if a firm has unused machines and workers, it can raise output quickly, so supply is elastic.
- **stocks** 库存—goods kept in store can be sold quickly, making supply elastic.
- ease of switching factors —if a firm can move factors of production to make this good easily, supply is more elastic.

Farm goods often have inelastic supply in the short run, because crops take a season to grow.

The market economic system

In a **market economy** 市场经济, the price mechanism makes all the choices. There is no government planning. (The opposite is a **planned economy** 计划经济, where the government makes the choices.)

Advantages of the market system:

- Prices guide resources to where they are wanted, without anyone planning.
- Firms compete, so they cut costs and create new and better goods.
- Consumers have wide choice.

Disadvantages:

- Some useful goods are not made because they earn no profit.
- The strong (rich firms and people) do well; the weak may be left with nothing.
- Markets can fail (see below).

Market failure

Market failure 市场失灵 happens when the price mechanism leads to an **inefficient** 低效率 use of resources —resources are not shared out in the best way for society. The main causes:

External costs and benefits



Pollution from a power station is an external cost—it falls on third parties, not just the producer

Image: Tony Webster, CC BY 2.0 (commons.wikimedia.org)

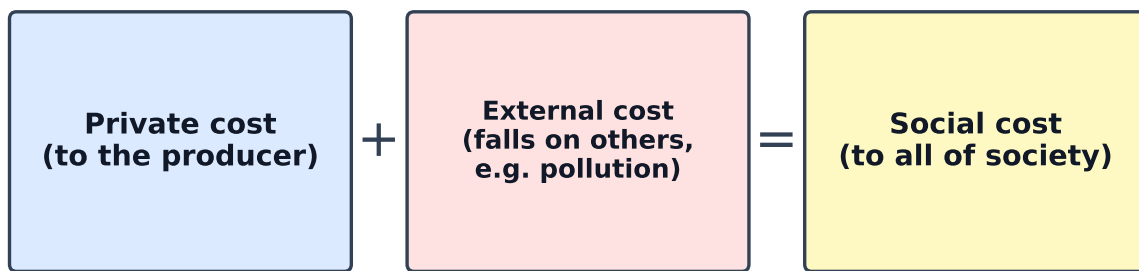
When you produce or consume something, the cost or benefit to *you* is not always the cost or benefit to *everyone*.

- a **private cost** 私人成本 is the cost to the person doing the activity.
- an **external cost** 外部成本 is a cost paid by other people—for example, smoke from a factory harms nearby families.
- the **social cost** 社会成本 is the private cost plus the external cost (the cost to the whole of society).

In the same way:

- a **private benefit** 私人效益 is the benefit to the person doing the activity.
- an **external benefit** 外部效益 is a benefit that others get for free—for example, your neighbour's tidy garden is nice for you too.
- the **social benefit** 社会效益 is the private benefit plus the external benefit.

Markets fail because firms and consumers only think about their *private* costs and benefits, not the external ones.



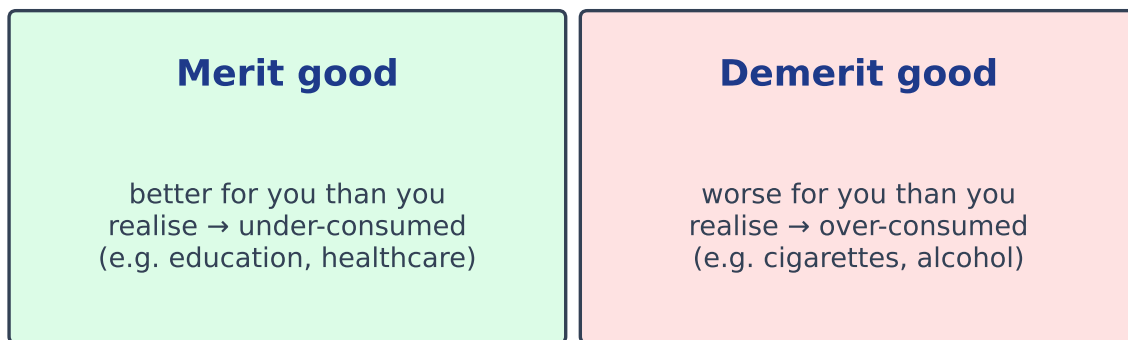
An external cost (e.g. pollution) falls on third parties, so the social cost is greater than the producer's private cost

Merit, demerit and public goods

- **merit goods** 有益物品 are better for you than you realise, so the market makes too few (education, healthcare).
- **demerit goods** 有害物品 are worse for you than you realise, so the market makes too many (cigarettes, alcohol).
- **public goods** 公共物品 are things everyone can use and no one can be stopped from using, like street lights or national defence. The market makes none, because firms cannot charge for them.



A private good is rival and excludable (firms supply it); a public good is non-rival and non-excludable (the government must supply it)



Merit and demerit goods are mis-judged because of information failure

Abuse of monopoly power

A **monopoly** 垄断 is a single firm that controls a market. With no competition, it can charge high prices and make poor-quality goods. This is another market failure.

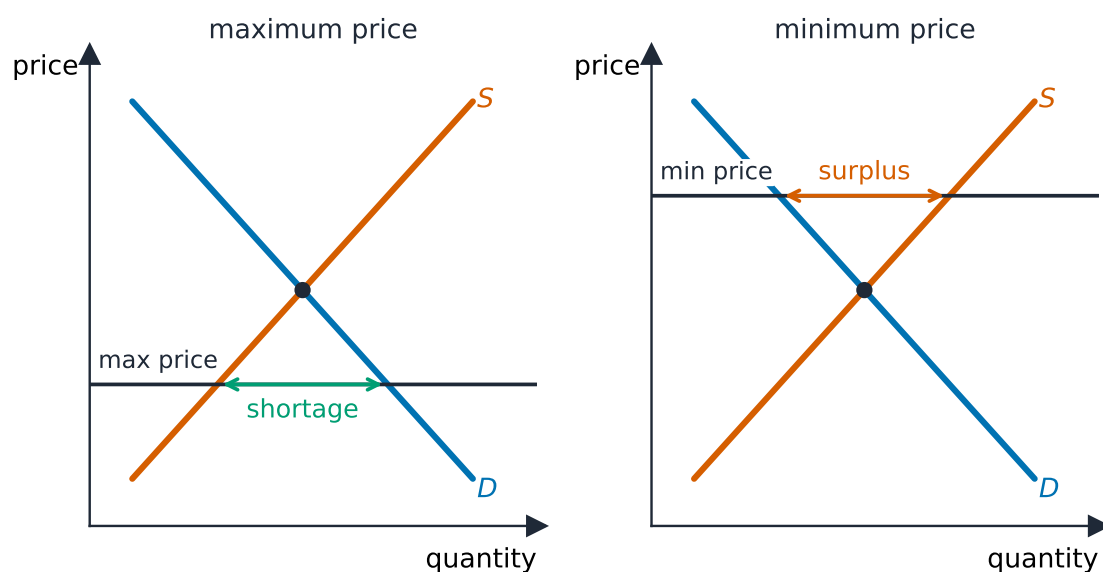
The mixed economic system

A **mixed economy** 混合经济 has both:

- a **private sector** 私营部门—firms owned by people, guided by the price mechanism.
- a **public sector** 公共部门—activity run by the government.

Most real economies are mixed; China's, for example, is a socialist market economy. The government steps in to correct market failure. This is government **intervention** 干预. The main methods:

Method	What it does
maximum price 最高价格	a price ceiling, set below equilibrium, to keep a good (like rent) cheap—but it causes a shortage
minimum price 最低价格	a price floor, set above equilibrium, to keep a price up (like a fair wage)—but it causes a surplus
indirect tax 间接税	a tax on a good (added to its price) to cut demand for demerit goods
subsidy	money paid to firms to cut the price and raise output of merit goods
regulation 监管	rules and laws, like banning smoking in public
direct provision 直接提供	the government makes and gives out goods itself, like state schools



A maximum price set below equilibrium causes a shortage; a minimum price set above equilibrium causes a surplus.

Judging intervention

Intervention can fix market failure, but it has costs. Taxes and rules cost money to collect and check. Governments can get things wrong too (this is called government failure). So you should always weigh the good effects against the bad ones before deciding.

Exam tips

- A change in a good's **own price** is a *movement along* the curve; a change in anything else (income, tastes, related prices) *shifts* the whole curve.
- **Equilibrium** is where demand meets supply. Below it there is excess demand (a shortage, so price rises); above it there is excess supply (a surplus, so price falls).
- $PED = \% \Delta Q \div \% \Delta P$. Demand is **inelastic** if $PED < 1$ (raising price raises revenue) and **elastic** if $PED > 1$ (raising price lowers revenue).
- **Market failure** (external costs, merit/demerit/public goods, monopoly) means resources are used badly; the government corrects it with taxes, subsidies, rules and direct provision.