HOLIDAY HOMEWORK 假期作业

AP Microeconomics

Exercise sheets, topic by topic.

每个单元：练习卷。

For class or self-study • no answer keys included.

Contents 目录

1 Scarcity, choice, and opportunity cost – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
scarcity	稀缺性			
opportunity cost	机会成本			
production possibilities curve (PPC)	生产可能性曲线			

Recall

Economics is about choices you already make:

- You cannot have everything –your money and time are limited.
- Picking one thing means giving up another.
- Making more of one thing can mean making less of another.

This sheet lines up the core ideas. Each idea has a worked example.

New ideas

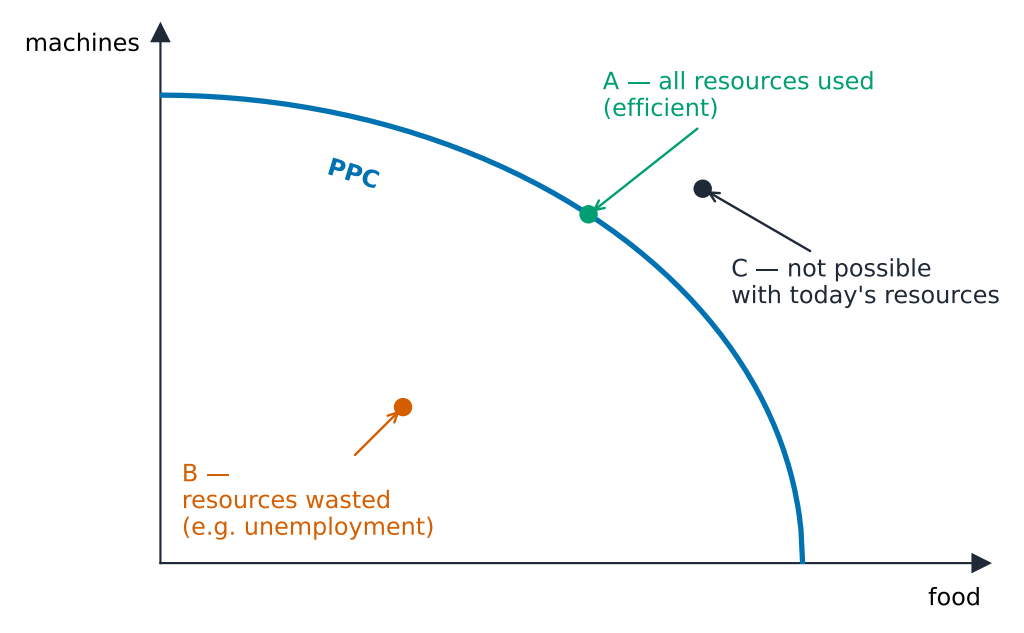
■ 1 Scarcity and opportunity cost

Economics begins with **scarcity** 稀缺性: wants are unlimited, but resources are limited. Every choice has an **opportunity cost** 机会成本–the value of the next-best thing you gave up.

Worked example. If you spend $20 and an afternoon on a concert instead of a $60 shift, the opportunity cost is the $60 you did not earn (plus the $20 ticket).

■ 2 The production possibilities curve

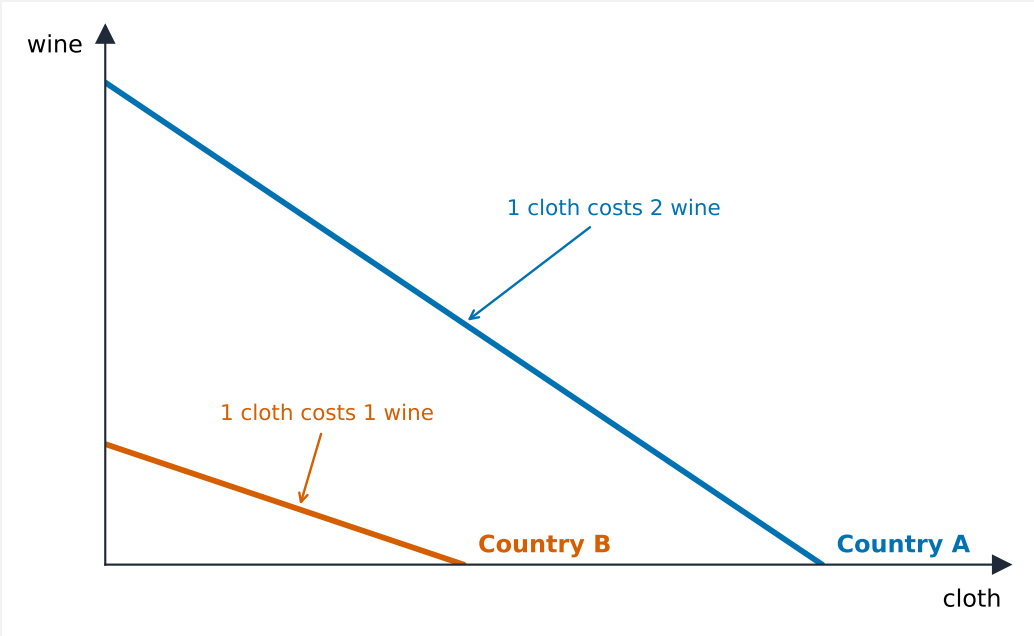
The **production possibilities curve (PPC)** 生产可能性曲线 shows the most of two goods an economy can make with resources fully used.



- **on** the curve = efficient; **inside** = wasteful; **outside** = impossible.
- Its downward slope shows opportunity cost: making more of one good means less of the other.

■ 3 Comparative advantage

A producer has a **comparative advantage** in a good if it can make it at a **lower opportunity cost**. Producers should specialize where they have it, then trade.



Watch out: money already spent and unrecoverable is a **sunk cost** –ignore it when deciding what to do next. Only future costs and benefits should affect a choice.

Practice

Try these in order. The methods are all above.

2.1 State what scarcity means and why it forces choices. [2]

2.2 You give up a $40 shift to study. State the opportunity cost of studying. [1]

2.3 On a PPC, state what a point outside the curve represents. [1]

2.4 Explain what a comparative advantage is. [2]

2.5 You have already paid $10 for a film ticket but now feel too tired to enjoy it. Explain why the $10 should not affect your decision to go. [2]

1 Marginal analysis and consumer choice – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
Marginal analysis	边际分析			
marginal benefit	边际收益			
marginal cost	边际成本			
Utility	效用			
diminishing marginal utility	边际效用递减			

Recall

Most real choices are not ”all or nothing” but ”a little more or a little less”:

- Should I study one more hour, or take a break?
- Should I buy one more snack?
- The first slice of pizza is great; the fifth, not so much.

This sheet lines up how economists make ”one more” decisions. Each idea has a worked example.

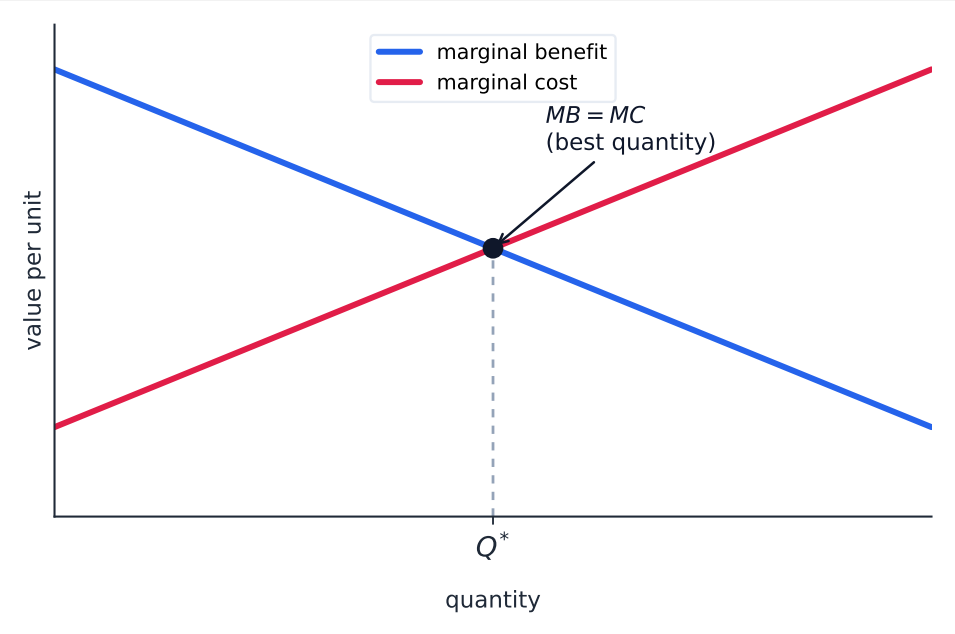
New ideas

■ 1 Marginal analysis

Marginal analysis 边际分析 compares the **marginal benefit** 边际收益 (the benefit of one more unit) with the **marginal cost** 边际成本 (the cost of one more unit).

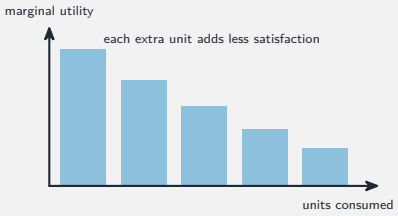
■

Keep doing the activity while marginal benefit is **greater** than marginal cost, and stop where they are **equal** ($MB = MC$). That point gives the most net benefit.



■ 3 Diminishing marginal utility

Utility 效用 is the satisfaction you get from a good. Each extra unit usually gives **less** added satisfaction –the law of **diminishing marginal utility** 边际效用递减.



Worked example. The first glass of water on a hot day is worth a lot; the fourth is worth much less –its marginal utility has fallen.

■ 4 Getting the best value

A shopper gets the most satisfaction by spending so that the **satisfaction per dollar** is equal across all goods. If one good gives more satisfaction per dollar, buy more of it.

Watch out: the decision rule is $MB = MC$ –stop where they are **equal**, not where benefit is highest. Going past $MB = MC$ adds units that cost more than they are worth.

Practice

Try these in order. The methods are all above.

2.1 State what marginal benefit and marginal cost mean. [2]

2.2 State the rule for the best amount of an activity to do. [1]

2.3 Explain the law of diminishing marginal utility, with an example. [2]

2.4 An activity has marginal benefit \$8 and marginal cost \$5 for the next unit. State whether you should do it, and why. [2]

2.5 Explain why you should stop where marginal benefit equals marginal cost, not where benefit is highest. [2]

2 Demand, supply, and surplus – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
Demand	需求			
supply	供给			
Equilibrium	均衡			
Consumer surplus	消费者剩余			
Producer surplus	生产者剩余			

Recall

You have seen prices respond to buyers and sellers:

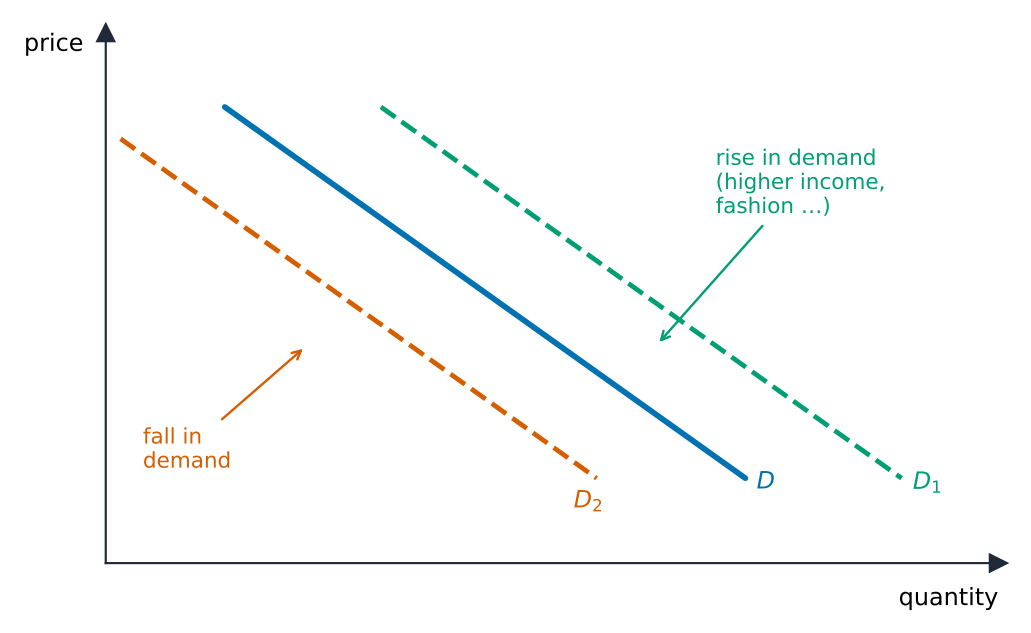
- Popular goods tend to cost more.
- When shops have too much stock, they cut prices.
- A market price is where buyers and sellers agree.

This sheet lines up demand, supply, and market equilibrium. Each idea has a worked example.

New ideas

■ 1 Demand and supply

Demand 需求 slopes **downward** (buyers buy less as price rises); **supply** 供给 slopes **upward** (sellers offer more as price rises).

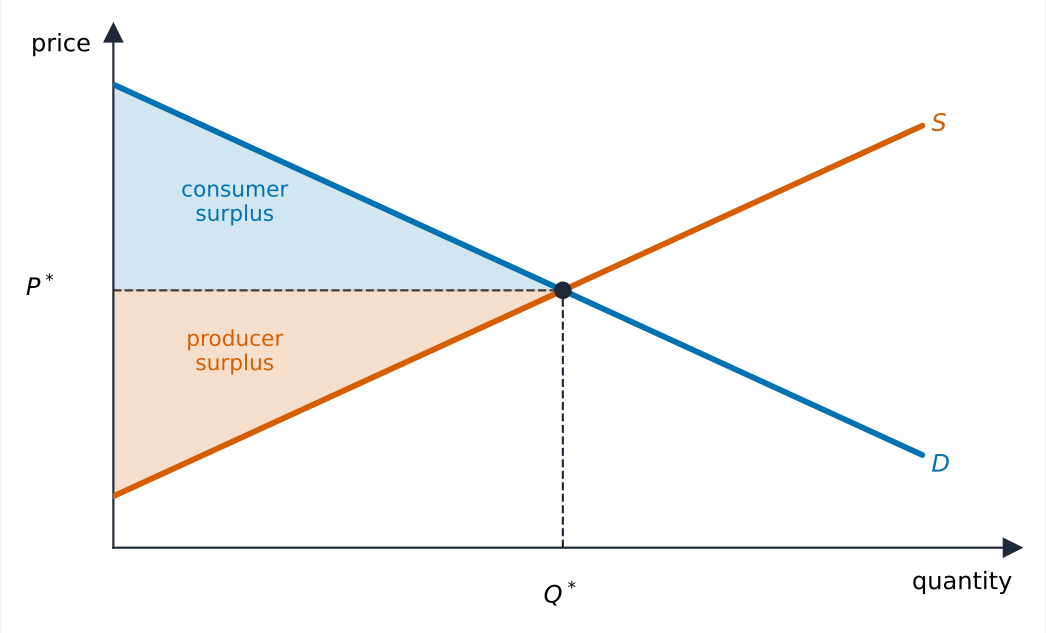


2 Equilibrium

Equilibrium 均衡 is where supply meets demand –the price that clears the market. Above it there is a surplus (price falls); below it a shortage (price rises).

3 Consumer and producer surplus

- **Consumer surplus** 消费者剩余 is the gap between what buyers would pay and what they do pay.
- **Producer surplus** 生产者剩余 is the gap between the price and sellers' lowest acceptable price.



4 Shifts

If a determinant (income, tastes, costs) changes, a curve shifts. A rightward demand shift raises both price and quantity; a rightward supply shift lowers price but raises quantity.

Watch out: the competitive equilibrium **maximizes** total surplus (consumer plus producer). That is why free markets are called efficient –they leave no mutually beneficial trade undone.

Practice

Try these in order. The methods are all above.

2.1 State the direction each of the demand and supply curves slopes. [2]

2.2 State what happens to price above the equilibrium, and why. [2]

2.3 Explain what consumer surplus is. [2]

2.4 A rise in income shifts demand right. State what happens to equilibrium price and quantity. [2]

2.5 State what the competitive equilibrium does to total surplus. [1]

2 Elasticity and government intervention – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
Price elasticity of demand	需求价格弹性			
elastic	富有弹性			
inelastic	缺乏弹性			
price ceiling	价格上限			
price floor	价格下限			

Recall

In Part A you met supply and demand. Now two more ideas:

- Some goods barely change in demand when the price changes; others swing a lot.
- Governments sometimes set maximum or minimum prices.

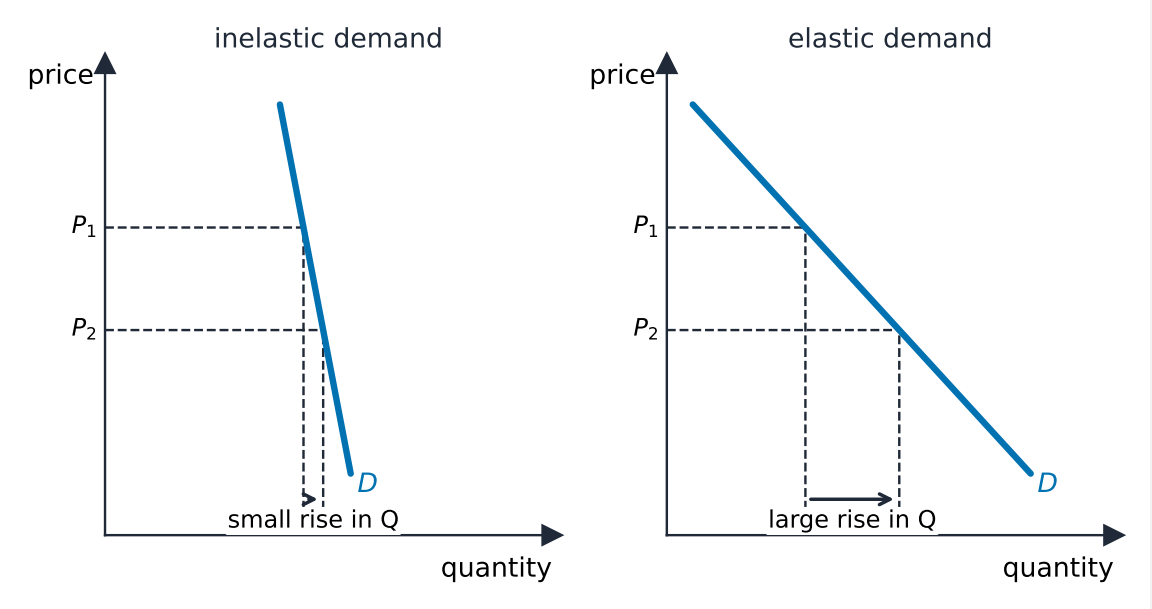
Each idea has a worked example before the Practice.

New ideas

■ 1 Price elasticity of demand

Price elasticity of demand 需求价格弹性 measures how strongly quantity responds to a price change:

$$E_d = \left| \frac{\%\ \Delta \text{ quantity}}{\%\ \Delta \text{ price}} \right|.$$



- $E_d > 1$ is **elastic** 富有弹性 (quantity responds strongly),
- $E_d < 1$ is **inelastic** 缺乏弹性 (quantity barely responds).

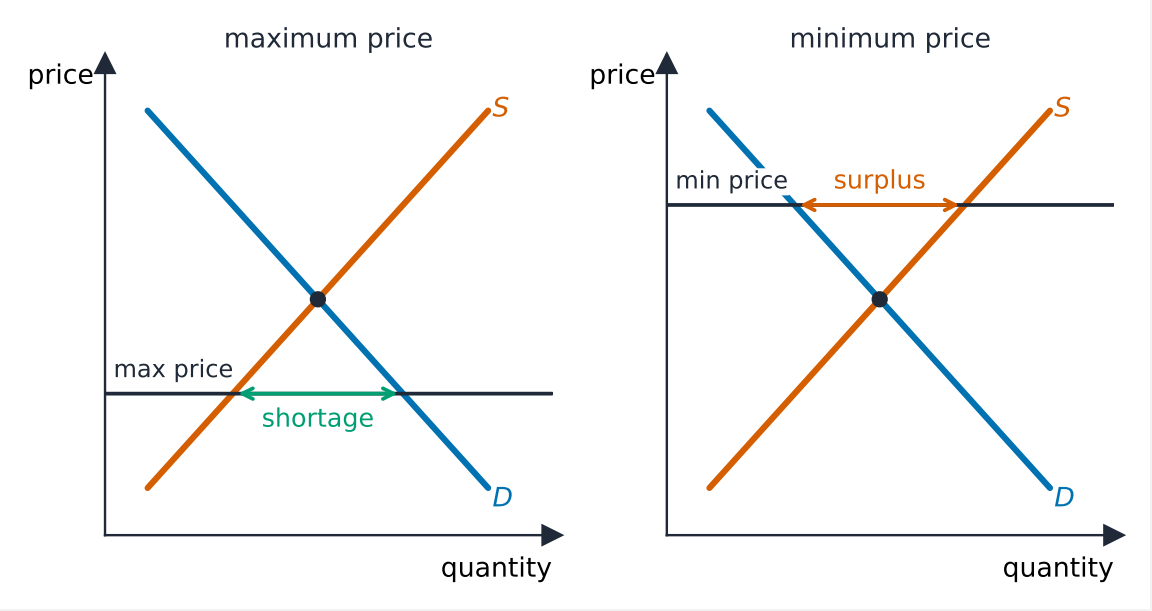
Worked example. If a 10% price rise cuts quantity by 5%, then $E_d = \dfrac{5\%}{10\%} = 0.5$ – inelastic.

2 What makes demand elastic

Demand is more elastic when there are more substitutes, the good is a luxury, or buyers have more time to adjust.

3 Price controls

- A **price ceiling** 价格上限 (a legal maximum, below equilibrium) causes a **shortage**.
- A **price floor** 价格下限 (a legal minimum, above equilibrium) causes a **surplus**.



Watch out: an elasticity below 1 still means demand **does** respond –just weakly. "Inelastic" does not mean "no response", only a small one.

Practice

Try these in order. The methods are all above.

2.1 State what price elasticity of demand measures. [1]

2.2 A 20% price rise cuts quantity demanded by 10%. Find the elasticity and state whether it is elastic or inelastic. [3]

2.3 State one thing that makes a good's demand more elastic. [1]

2.4 State what a price ceiling below equilibrium causes, and why. [2]

2.5 State what a price floor above equilibrium (like a minimum wage) causes. [2]

3 A firm's costs – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
Fixed cost	固定成本			
Variable cost	可变成本			
Economies of scale	规模经济			

Recall

Businesses have to think about costs:

- Some costs stay the same however much you make (rent).
- Other costs rise as you produce more (materials).
- Making things in bulk can lower the cost per item.

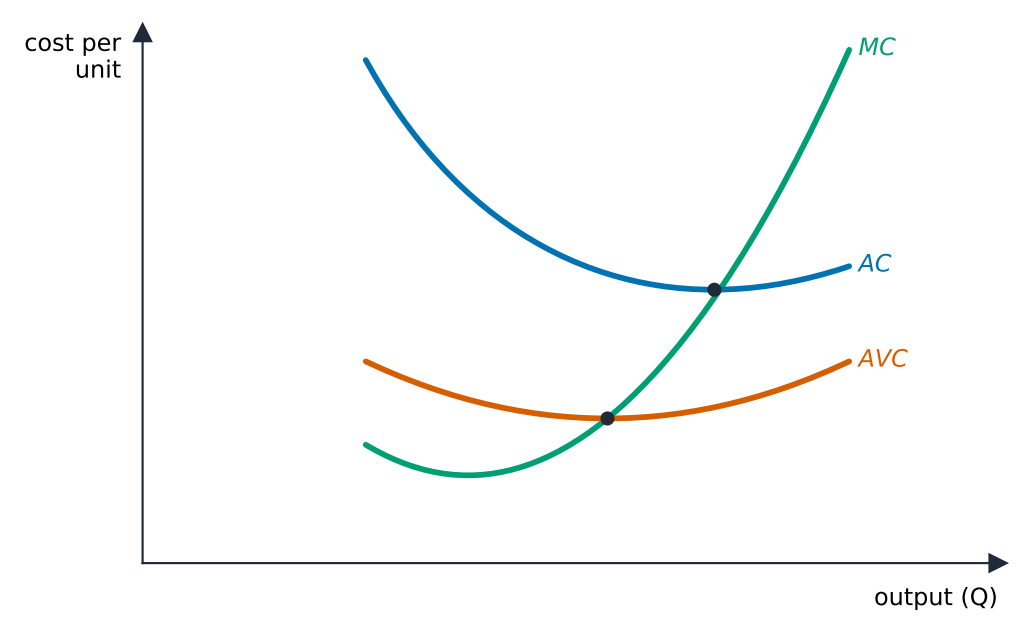
This sheet lines up a firm's costs. Each idea has a worked example.

New ideas

1 Fixed and variable costs

- **Fixed cost** 固定成本 does not change with output (rent on the factory).
- **Variable cost** 可变成本 rises with output (materials, labour).
- Total cost = fixed + variable.

2 Per-unit costs

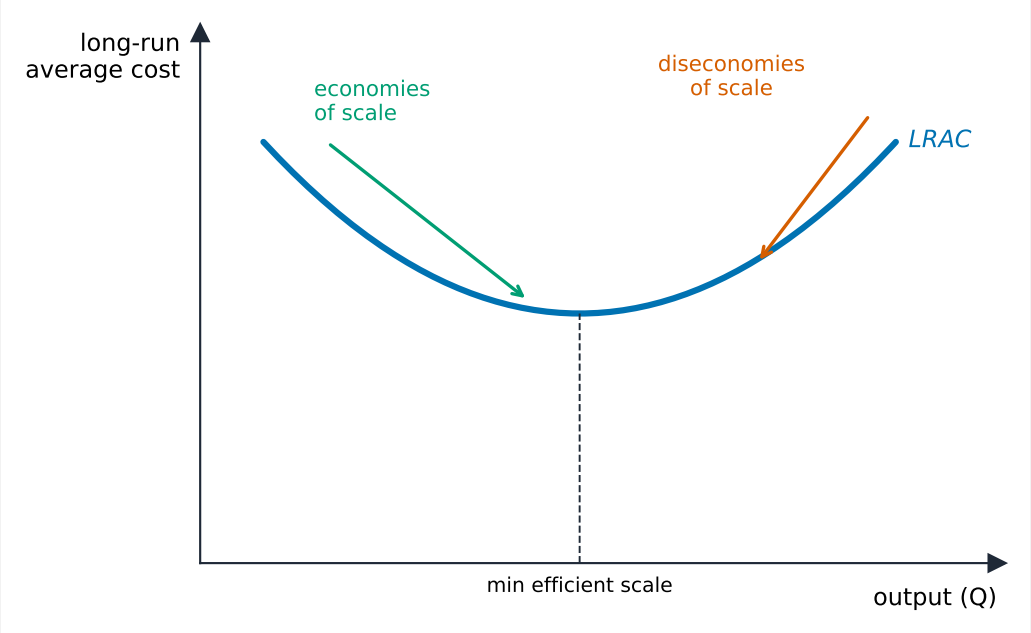


- **Average total cost (ATC)** = total cost ÷ quantity.
- **Marginal cost (MC)** = the cost of making one **more** unit.

Worked example. If total cost is \$300 for 10 units, $ATC = \frac{300}{10} = \$30$. If making an 11th unit raises total cost to \$325, the marginal cost of that unit is \$25.

3 Economies of scale

Economies of scale 规模经济 mean the average cost **falls** as the firm grows – through bulk buying and specialization.



4 Diseconomies of scale

If a firm grows too big to manage well, average cost can start to **rise** again –diseconomies of scale.

Watch out: marginal cost is the cost of the **next** unit, not the average cost. A firm decides whether to make one more unit by looking at its marginal cost, not the average.

Practice

Try these in order. The methods are all above.

2.1 State the difference between a fixed cost and a variable cost, with an example of each. [2]

2.2 A firm's total cost for 5 units is \$200. Find the average total cost. [2]

2.3 Making a 6th unit raises total cost from \$200 to \$236. Find the marginal cost of that

unit. [2]

2.4 Explain what economies of scale are. [2]

2.5 State one reason a very large firm might face rising average costs. [1]

3 Profit and perfect competition – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
marginal revenue	边际收益	
Economic profit	经济利润	
Perfect competition	完全竞争	

Recall

In Part A you met a firm's costs. Now how much it should make, and what "profit" really means:

- A firm wants to make the most profit it can.
- Profit is what is left after paying costs.
- But economists count the cost of missed opportunities too.

Each idea has a worked example before the Practice.

New ideas

1 Profit maximization

Every firm makes the most profit at the quantity where **marginal revenue** 边际收益 (the extra revenue from one more unit) equals **marginal cost**:

$$MR = MC.$$

Make each unit whose revenue beats its cost; stop where they are equal.

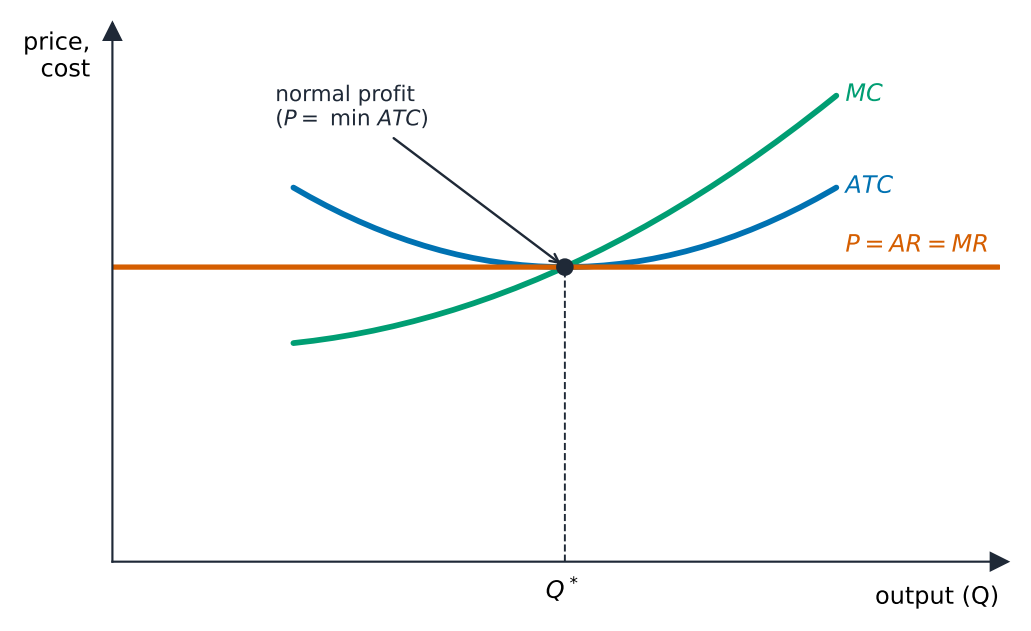
2 Two kinds of profit

- **Accounting profit** = revenue − the money costs you pay.
- **Economic profit** 经济利润 = revenue − money costs − the opportunity costs of your own resources.

Worked example. A shop earns \$200,000 and pays \$120,000 in costs, so accounting profit is \$80,000. But the owner gave up a \$70,000 salary elsewhere, so economic profit is $80{,}000 - 70{,}000 = \$10{,}000$.

■ 3 Perfect competition

Perfect competition 完全竞争 has many small firms selling an identical product, with free entry. Each firm is a **price taker** –too small to change the market price.



■ 4 The long run

In perfect competition, profits attract new firms (entry) until economic profit falls to **zero** –firms just cover all their costs, including opportunity costs.

Watch out: zero **economic** profit is not the disaster it sounds –it means the owner is earning exactly what their resources could earn elsewhere. It is a perfectly acceptable, "normal" outcome.

Practice

Try these in order. The methods are all above.

2.1 State the rule for the profit-maximizing quantity. [1]

2.2 State the difference between accounting profit and economic profit. [2]

2.3 A business earns $150,000 and pays $90,000 in costs. Find the accounting profit. [2]

2.4 The owner gave up a $50,000 salary. Find the economic profit. [2]

2.5 Explain why firms in perfect competition earn zero economic profit in the long run. [2]

4 Market power and monopoly – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
market power	市场势力			
monopoly	垄断			
barriers to entry	进入壁垒			
deadweight loss	无谓损失			

Recall

Not every market has lots of small firms:

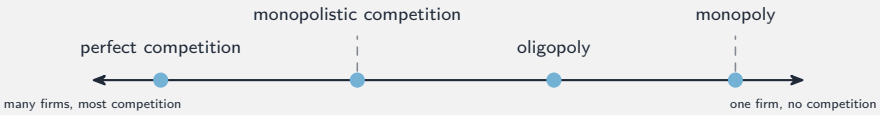
- Some products come from just one company, or a few big ones.
- A single seller can charge a higher price than a competitive market.
- Firms with power behave differently from price-takers.

This sheet lines up monopoly. Each idea has a worked example.

New ideas

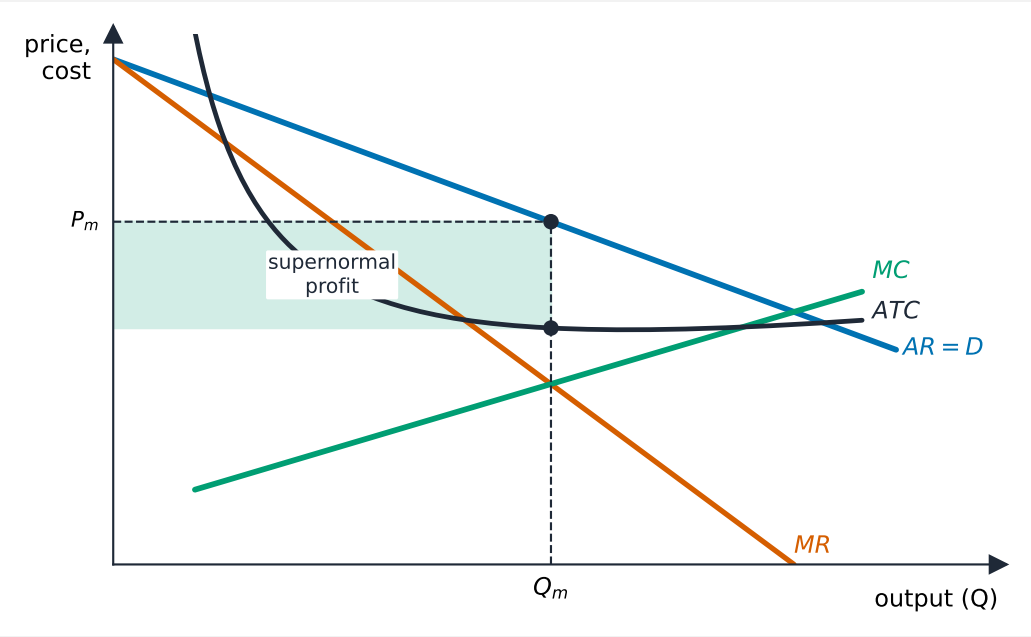
■ 1 Market power

Most real markets are **imperfectly competitive** –firms have some **market power** 市场势力 (the ability to set the price, not just take it).



2 Monopoly

A **monopoly** 垄断 is a single seller with no close substitutes, protected by **barriers to entry** 进入壁垒 (patents, control of a resource, or huge economies of scale).



3 Less output, higher price

Compared with perfect competition, a monopoly produces **less** and charges **more**, and it can keep earning profit because entry is blocked.

4 Deadweight loss

Because it under-produces, a monopoly creates **deadweight loss** 无谓损失–mutually beneficial trades that no longer happen. This is why monopolies are seen as inefficient.

Watch out: a monopoly cannot charge **any** price it likes –it is still limited by the demand curve. Charge too much and buyers walk away; it picks the price that maximizes profit, not the highest possible price.

Practice

Try these in order. The methods are all above.

2.1 State what "market power" means. [1]

2.2 State what a monopoly is and give one barrier to entry that protects it. [2]

2.3 Compared with perfect competition, state what a monopoly does to output and price. [2]

2.4 Explain what deadweight loss is. [2]

2.5 Explain why a monopoly still cannot charge an unlimited price. [2]

4 Oligopoly and game theory – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
oligopoly	寡头垄断			
game theory	博弈论			
dominant strategy	优势策略			
Nash equilibrium	纳什均衡			

Recall

In Part A you met monopoly. Now markets with just a **few** big firms:

- Cars, phones, and airlines are sold by a handful of large companies.
- Each firm watches what its rivals do before deciding.

Each idea has a worked example before the Practice.

New ideas

1 Oligopoly

An **oligopoly** 寡头垄断 is a market with a **few** large firms that are **interdependent** –each firm's best move depends on what its rivals do.

2 Game theory

Because firms react to each other, economists use **game theory** 博弈论. A **payoff matrix** shows each firm's profit for every combination of choices.

3 Dominant strategy and Nash equilibrium

- A **dominant strategy** 优势策略 is a firm's best choice **whatever** the rival does.
- A **Nash equilibrium** 纳什均衡 is an outcome where no firm can do better by

changing its choice alone.

Worked example. Two firms each pick High or Low price. Profits (A, B): both High $\rightarrow (10, 10)$; A Low, B High $\rightarrow (14, 4)$; both Low $\rightarrow (6, 6)$. For A, Low beats High whatever B does, so **Low is dominant** –and by symmetry for B. The Nash equilibrium is both Low $(6, 6)$, worse for both than cooperating.

■ 4 Why cooperation is hard

Firms would both gain by cooperating (acting like a monopoly), but each has an incentive to cheat –so they often end up at the worse outcome. This is the prisoners' dilemma.

Watch out: the Nash equilibrium can be **worse for everyone** than cooperating – yet each firm still ends up there, because each is following its own best move given the other's.

Practice

Try these in order. The methods are all above.

2.1 State what an oligopoly is. [2]

2.2 State what a "dominant strategy" is. [2]

2.3 State what a Nash equilibrium is. [2]

2.4 For the example (both Low = $(6, 6)$, cooperating = $(10, 10)$), state which outcome the firms reach and why it is worse for them. [2]

2.5 Explain why firms in an oligopoly find it hard to cooperate. [2]

5 The labour market – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
factor market	要素市场			
derived demand	派生需求			
marginal revenue product	边际收益产品			

Recall

Firms don't only sell goods –they also buy workers and resources:

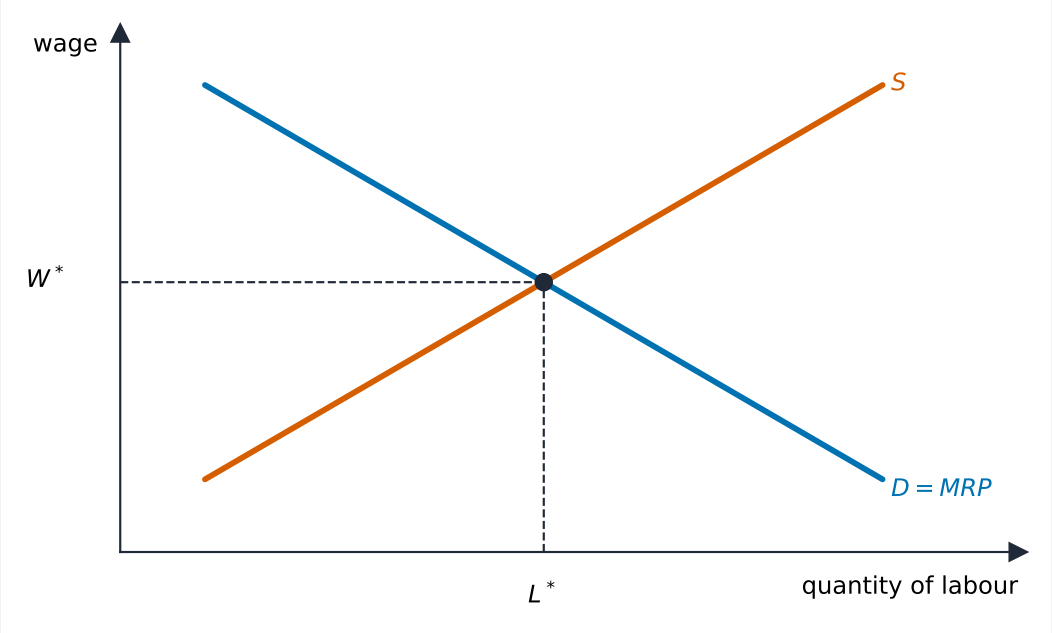
- Businesses hire workers and pay wages.
- A worker is worth hiring if they bring in more than they cost.
- Demand for workers depends on demand for what they make.

This sheet lines up the labour market. Each idea has a worked example.

New ideas

■ 1 Factor markets

A **factor market** 要素市场 is where firms buy the factors of production –labour, land, capital. The roles reverse: firms **demand** and households **supply**.



2 Derived demand

Demand for workers is a **derived demand** 派生需求–firms want workers not for themselves but for the output they produce. So more demand for a product means more demand for its workers.

3 Marginal revenue product

A worker's value to the firm is the **marginal revenue product** 边际收益产品 (MRP): the extra revenue from hiring one more worker, MRP = marginal product × price.

Worked example. A worker makes 8 units, each sold for \$5, so $MRP = 8 \times \$5 = \$40$.

4 The hiring rule

A firm hires workers up to where the MRP equals the **wage**. If a worker's MRP is above the wage, hire them; if below, do not.

Watch out: as a firm hires more workers, each new worker usually adds **less** output (diminishing returns), so MRP falls. The firm keeps hiring only until MRP drops to the wage.

Practice

Try these in order. The methods are all above.

2.1 State who demands and who supplies in a labour market. [2]

2.2 Explain what ”derived demand” means for workers. [2]

2.3 A worker makes 6 units, each sold for $4. Find the marginal revenue product. [2]

2.4 The wage is $30. State whether the firm should hire the worker in 2.3, and why. [2]

2.5 State the rule a firm uses to decide how many workers to hire. [1]

5 Monopsony – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
monopsony	买方垄断			
marginal factor cost	边际要素成本			

Recall

In Part A you met the competitive labour market. Now what happens with only **one** big employer:

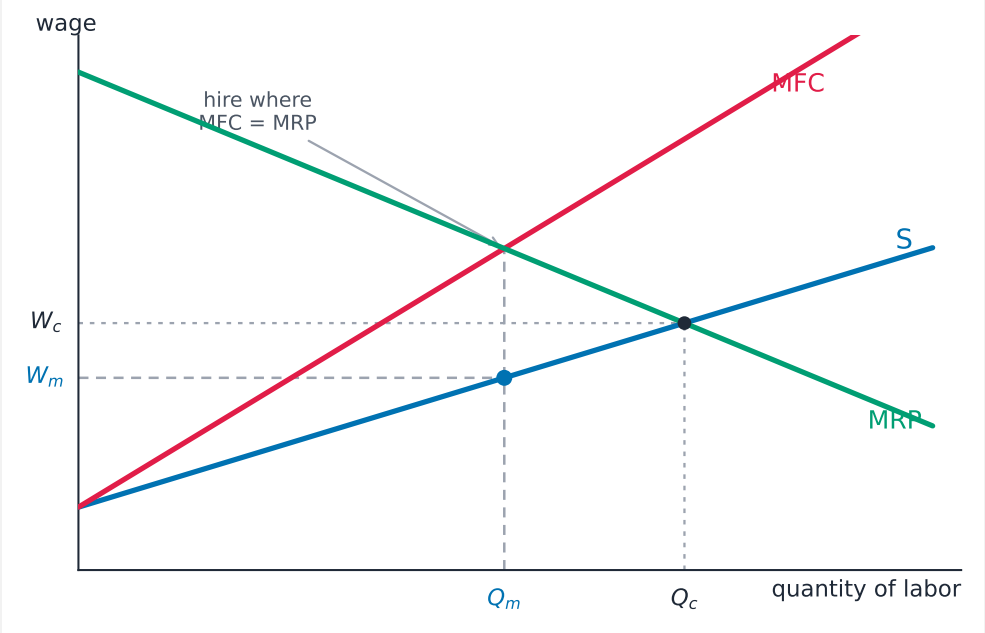
- In some towns, a single large company hires most of the workers.
- With little competition for workers, that firm has power over wages.

Each idea has a worked example before the Practice.

New ideas

■ 1 Monopsony

A **monopsony** 买方垄断 is a market with a **single buyer** of a factor –for example, the only big employer in a town.



2 Raising the wage for everyone

Because it is the whole market, to hire more workers the monopsonist must raise the wage **for everyone** –not just the new hire.

3 Marginal factor cost

So the cost of one more worker (the **marginal factor cost** 边际要素成本, MFC) is **above** the wage. It is the mirror image of a monopoly, where marginal revenue is below the price.

4 The result

A monopsony hires **fewer** workers at a **lower** wage than a competitive market would –it uses its power over wages to hold both down.

Watch out: a monopsony pays **less** than a competitive market, not more. Its single-buyer power lets it push the wage below what many firms competing for the same workers would offer.

Practice

Try these in order. The methods are all above.

2.1 State what a monopsony is. [2]

2.2 Explain why a monopsonist must raise the wage for everyone to hire one more

worker. [2]

2.3 State whether the marginal factor cost is above or below the wage for a monopsonist. [1]

2.4 Compared with a competitive market, state what a monopsony does to the wage and the number of workers. [2]

2.5 State which everyday situation could create a monopsony. [1]

6 Externalities – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
externality	外部性			
negative externality	负外部性			
positive externality	正外部性			
Pigovian tax	庇古税			

Recall

Markets usually work well, but not always:

- A factory's pollution harms people who had nothing to do with it.
- A vaccination protects not just you but everyone around you.
- Sometimes the government steps in to fix a problem.

This sheet lines up externalities. Each idea has a worked example.

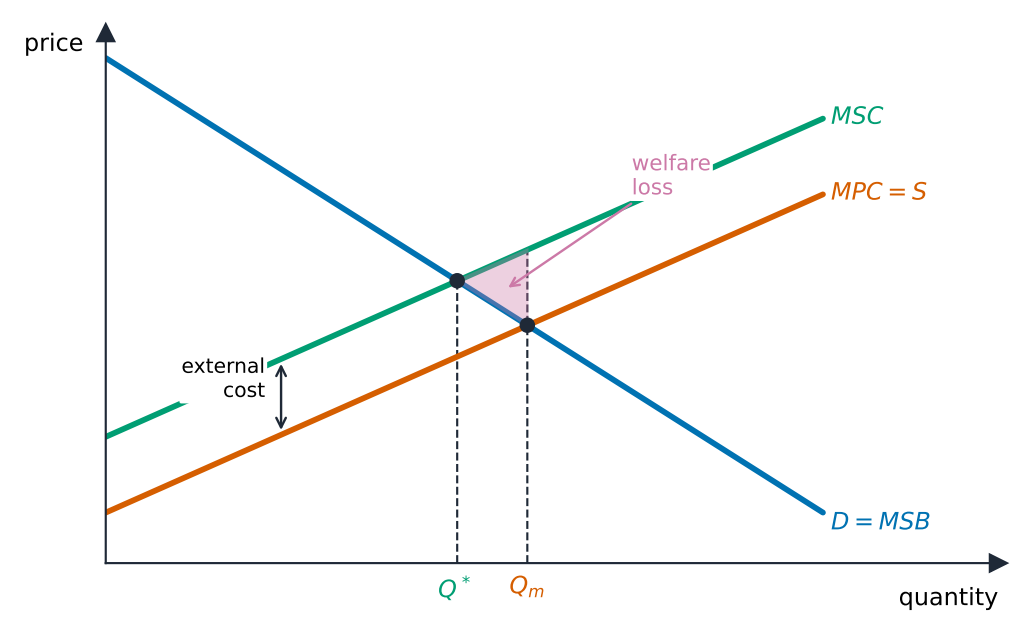
New ideas

1 Externalities

An **externality** 外部性 is a cost or benefit that falls on a **third party** not involved in a transaction –so buyers and sellers ignore it.

2 Negative externalities

A **negative externality** 负外部性 (like pollution) means the true cost to society is **higher** than the private cost, so the market **over-produces**.



3 Positive externalities

A **positive externality** 正外部性 (like vaccination or education) means society benefits **more** than the private buyer, so the market **under-produces**.

4 Fixing them

- A **Pigovian tax** 庇古税 on a negative externality makes producers pay for the harm, cutting output to the right level.
- A **subsidy** on a positive externality encourages more of it.

Worked example. A factory's private cost is \$8 per unit, but each unit also causes \$3 of pollution. A tax of \$3 per unit raises the firm's cost to the true social cost of \$11, so it produces the efficient amount.

Watch out: with a negative externality the market makes **too much** (it ignores the harm); with a positive externality it makes **too little** (it ignores the extra benefit). The fixes go in opposite directions.

Practice

Try these in order. The methods are all above.

2.1 State what an externality is. [2]

2.2 Give one example of a negative and one of a positive externality. [2]

2.3 State whether the market over- or under-produces a good with a negative externality. [1]

2.4 A factory's private cost is \$10 per unit and it causes \$4 of pollution per unit. State the Pigovian tax that would correct this. [2]

2.5 State the tool a government uses to encourage a good with a positive externality. [1]

6 Public goods and inequality – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
public good	公共物品			
free-ride	搭便车			
Lorenz curve	洛伦兹曲线			
Gini coefficient	基尼系数			

Recall

In Part A you met externalities. Now two more reasons markets need help:

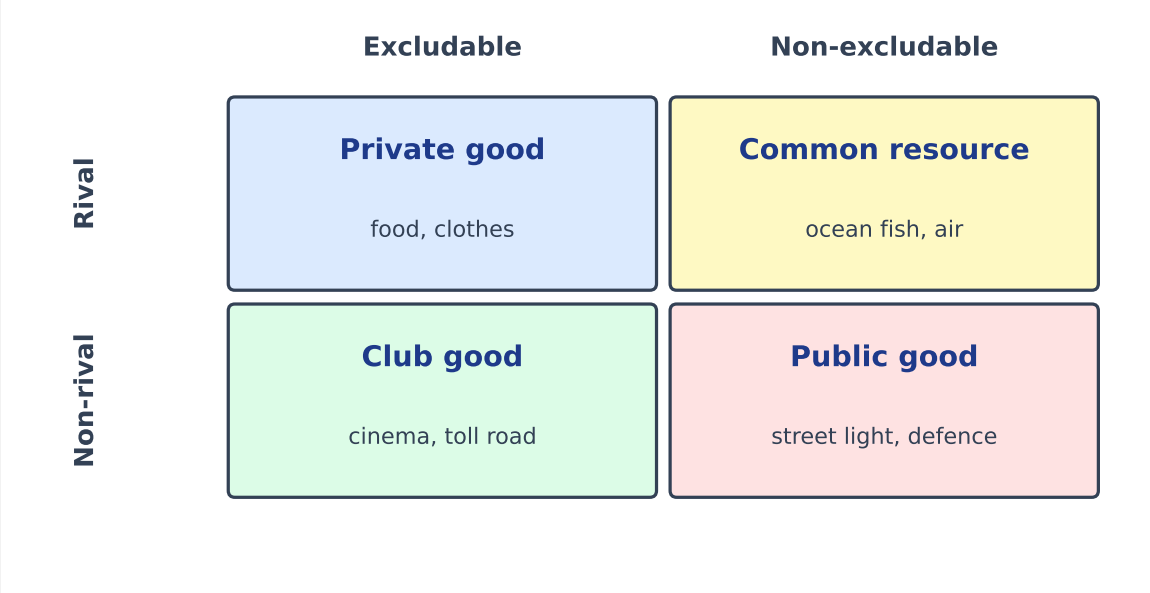
- Some things (like street lighting) would never be provided by a shop.
- Market incomes can be very unequal.

Each idea has a worked example before the Practice.

New ideas

■ 1 Rival and excludable

Goods differ in two ways: is one person's use at another's expense (**rival**), and can non-payers be kept out (**excludable**)?

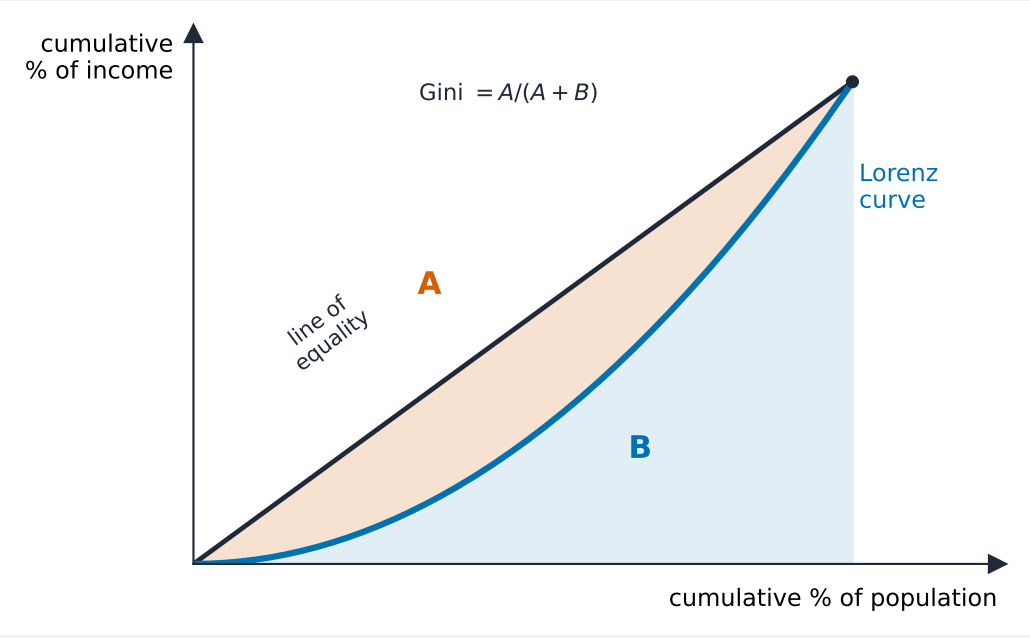


2 Public goods

A **public good** 公共物品 is **non-rival and non-excludable** (national defence, street lighting). Since non-payers cannot be excluded, people **free-ride** 搭便车, so markets **under-provide** it –and government usually supplies it.

3 Measuring inequality

Market incomes can be very unequal. The **Lorenz curve** 洛伦兹曲线 plots the share of income against the share of population; the further it bows from the diagonal, the more unequal.



4 The Gini coefficient

The **Gini coefficient** 基尼系数 summarizes this in one number: 0 means perfect equality, 1 means perfect inequality.

> **Watch out:** a **public** good is not just any good the government provides –it must be **non-rival and non-excludable**. A public hospital's beds are rival (one patient's use blocks another's), so healthcare is not a pure public good.

Practice

Try these in order. The methods are all above.

2.1 State the two features that define a public good. [2]

2.2 Explain why markets under-provide public goods (use the idea of free-riding). [2]

2.3 Give one example of a public good. [1]

2.4 State what a Gini coefficient of 0 and of 1 each mean. [2]

2.5 State what a Lorenz curve that bows far from the diagonal tells you. [1]