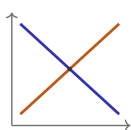


Supply and Demand

AP Microeconomics • Unit 2

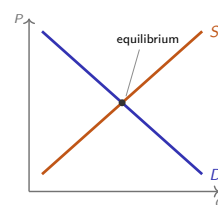
AP Microeconomics



Supply and Demand

What we will cover

- 1 Demand & supply
- 2 Elasticity (PED & PES)
- 3 Cross-price & income elasticity
- 4 Equilibrium & surplus
- 5 Price controls & taxes
- 6 International trade



1 Demand & supply

Supply and Demand

└ Demand & supply

The law of demand

Demand 需求 is the whole price-quantity relationship; **quantity demanded** 需求量 is one point on it.

- price up $\Rightarrow$ quantity down (inverse 反向关系)
- substitution effect** 替代效应: switch to cheaper goods
- income effect** 收入效应: your money buys less



Buyers respond when prices change

Supply and Demand

└ Demand & supply

Movement vs shift

Movement along 沿曲线移动
only the good's own price changed – slide to another point

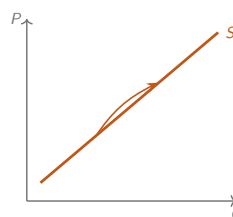
Shift 移动
something else changed – whole curve moves left/right

TIPEN shifts demand: **Tastes** 偏好, Income, Prices of related goods (substitutes 替代品/complements 互补品), Expectations, Number of buyers.

Supply and Demand

└ Demand & supply

The law of supply



Supply 供给: price up $\Rightarrow$ quantity up (a direct relationship 正向关系). The curve slopes up because each extra unit adds **marginal cost** 边际成本.

TITEN shifts supply: **Technology** 技术, Input prices, Taxes/subsidies 补贴, Expectations, Number of sellers.

2 Elasticity

Supply and Demand
└ Elasticity

Price elasticity of demand

PED 需求价格弹性 = $\frac{\% \Delta Q_d}{\% \Delta P}$ – how strongly quantity responds to price. Use the **midpoint method** 中点法 and read |PED|.

Elastic
|PED| > 1

Unit elastic
|PED| = 1

Inelastic
|PED| < 1

More elastic when: many substitutes, a large share of income, more **time** 时间 to adjust.

Supply and Demand
└ Elasticity

The total revenue test

$TR = P \times Q$. When you change price, elasticity decides whether revenue rises.

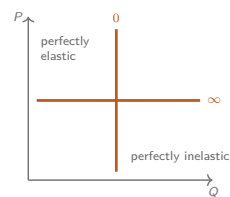
Elastic
price & TR move **opposite**
cut price → TR up

Inelastic
price & TR move **together**
raise price → TR up

On a straight-line demand curve the **upper** half is elastic, the **midpoint** is unit elastic, the **lower** half inelastic. TR is greatest at the midpoint.

Supply and Demand
└ Elasticity

Price elasticity of supply



PES 供给价格弹性 = $\frac{\% \Delta Q_s}{\% \Delta P}$ (positive).

- > 1 elastic, < 1 inelastic
- horizontal S: **perfectly elastic** 完全弹性 (∞)
- vertical S: **perfectly inelastic** 完全无弹性 (0)

More elastic with more **time** 时间跨度 and **spare capacity** 闲置产能.

Supply and Demand
└ Elasticity

Cross-price & income elasticity

XED 交叉价格弹性 = $\frac{\% \Delta Q_x}{\% \Delta P_y}$
+ ⇒ substitutes –
⇒ complements

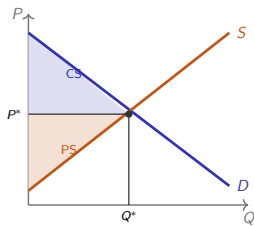
YED 收入弹性 = $\frac{\% \Delta Q}{\% \Delta \text{income}}$
+ ⇒ **normal good** 正常商品
– ⇒ **inferior good** 低档商品

Worked example

Income rises 10%; bus-ticket demand falls 5%. $YED = \frac{-5\%}{10\%} = -0.5$ – negative, so bus travel is an **inferior good**.

3 Equilibrium & surplus

Equilibrium, consumer & producer surplus



Equilibrium 均衡: where D meets S ;
 $Q_d = Q_s$.

- **consumer surplus** 消费者剩余: below D , above P^*
- **producer surplus** 生产者剩余: above S , below P^*

Total surplus is largest here – **allocative efficiency** 配置效率, where $MB = MC$.

Worked example – surplus

Solve for equilibrium and surplus

Demand $P = 20 - Q$, supply $P = 2 + Q$. Set equal: $20 - Q = 2 + Q \Rightarrow Q = 9$, $P = \$11$.

Consumer surplus $= \frac{1}{2} \times 9 \times (20 - 11) = \40.50 .

Producer surplus $= \frac{1}{2} \times 9 \times (11 - 2) = \40.50 .

Total surplus = \$81.

Disequilibrium & shifts

Price too high $\Rightarrow$ surplus 过剩 $\rightarrow$ price falls

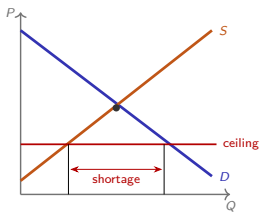
Price too low $\Rightarrow$ shortage 短缺 $\rightarrow$ price rises

Shift rules: D right $\rightarrow P \uparrow Q \uparrow$; D left $\rightarrow P \downarrow Q \downarrow$; S right $\rightarrow P \downarrow Q \uparrow$; S left $\rightarrow P \uparrow Q \downarrow$. When **both shift** 同时移动, one result is **indeterminate** 不确定.

4

Intervention & trade

Price controls

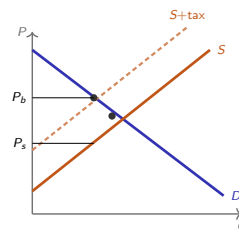


Price ceiling 价格上限 (max): binds **below** equilibrium $\Rightarrow$ shortage (rent control).

Price floor 价格下限 (min): binds **above** equilibrium $\Rightarrow$ surplus (minimum wage).

Any binding control cuts quantity below efficient: a **deadweight loss** 无谓损失.

Taxes & incidence



A **per-unit tax** 从量税 shifts S up by the tax: buyers pay more (P_b), sellers keep less (P_s), quantity falls, deadweight loss appears.

Tax incidence 税收归宿: the **more inelastic** side pays the larger share – it cannot escape by changing quantity.

International trade

Under **autarky** 自给自足 the price is domestic; opening up, the country trades at the **world price** 世界价格.

- World price **below** domestic ⇒ **importer** 进口国; CS up
- World price **above** domestic ⇒ **exporter** 出口国; PS up

Free trade 自由贸易 raises total surplus. A **tariff** 关税 or quota creates deadweight loss.



Open trade links local and world prices

Key points

Own price → move along;
a **determinant** → shift

PED/PES classify response;
TR test follows elasticity

Equilibrium maximises total surplus ($MB = MC$)

Controls, taxes & tariffs → **deadweight loss**

Check yourself

- 1 Price rises and total revenue falls. Elastic or inelastic?
- 2 A change in price: movement or shift?
- 3 A price ceiling below equilibrium causes what?
- 4 Who bears more of a tax – the more inelastic side or the more elastic?

Answers 1. elastic 2. a movement along the curve 3. a shortage 4. the more inelastic side