Choice, models and market adjustment

Edexcel IAL Economics WEC11 sections 1.3.1-1.3.4 full package

Choice, models and market adjustment

- use models, **ceteris paribus** and the **production possibility frontier** to think about **scarcity** and choice;
- explain demand and supply, what moves along a curve and what shifts it;
- calculate and use price, income and cross elasticities of demand and the price elasticity of supply;

Choice, models and market adjustment (2)

- find a market **equilibrium**, consumer and **producer surplus**, and the three functions of the **price mechanism**;
- work out who really pays an indirect tax and who gains from a subsidy.

Introductory concepts

- A point **on** the frontier is efficient: you cannot make more of one good without making less of the other.
- A point **inside** is possible but wasteful: some workers or machines are idle, as in a recession.
- A point **outside** is unobtainable with current resources.

Introductory concepts (2)

- The frontier is bowed outward because resources are not equally good at everything. Moving more resources into **capital goods** means using workers and land that are worse and worse at making them, so the **opportunity cost** of each extra unit rises.
- The whole frontier shifts **outward** with more resources, better education or new technology, and **inward** after a war or a natural disaster.
- In a **free market economy** 自由市场经济, prices answer them. Incentives are strong, but the result can be very unequal, and markets fail to provide some goods.

Introductory concepts (3)

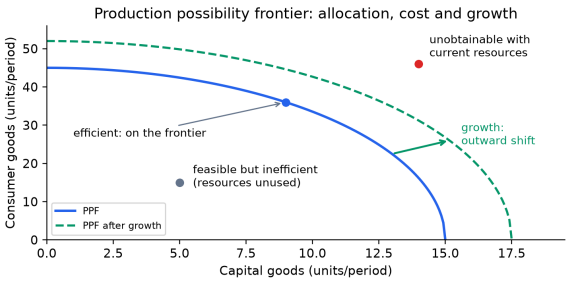
- In a **command economy 计划经济**, the state answers them. In the Soviet Union, the planning office Gosplan set output targets for the whole economy. It could build heavy industry fast, but it often misread what people wanted and weakened the reward for effort.
- A **mixed economy 混合经济** uses markets for most goods while the state provides public goods, regulates and redistributes income.

Figure: Introductory concepts



- An open-pit mine: land and minerals are scarce, so using them one way means not using them another
- Match each part of the diagram to the text.

Figure: Introductory concepts ·



- Point on the frontier is efficient, point inside wastes resources, point outside is unobtainable; growth shifts the whole frontier out
- Match each part of the diagram to the text.

Consumer behaviour and demand

- **Herding**: copying others, as in queues outside a newly famous milk-tea shop.
- **Habit** and **inertia**: staying with the same phone plan for years although a cheaper one exists.
- Weak **computational skills**: misjudging the true cost of an instalment plan.

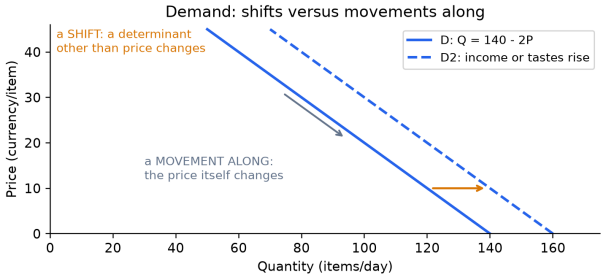
Consumer behaviour and demand (2)

- The need to feel valued, and framing: "90% fat-free" sells better than "10% fat".
- the price of a **substitute** 替代品 (chicken for pork) or a **complement** 互补品 (petrol for cars);
- real income;

Consumer behaviour and demand (3)

- tastes and fashion;
- the size and age structure of the population;
- advertising.

Figure: Consumer behaviour and demand



- A price change moves along the curve; a rise in income or a change in tastes shifts the whole curve
- Match each part of the diagram to the text.

Elasticities of demand

- Known: at $P = 20$, $Q_d = 140 - 2(20) = 100$. At $P = 22$, $Q_d = 140 - 44 = 96$.
- Percentage changes: price $\frac{2}{20} = +10\%$; quantity $\frac{-4}{100} = -4\%$.
- PED $= \frac{-4}{10} = -0.4$. The size is less than 1, so demand is **price inelastic 缺乏弹性的** here.

$$\text{PED} = \frac{\%\Delta Q_d}{\%\Delta P}$$

Elasticities of demand (2)

- **Total revenue 总收入** $TR = P \times Q$: before, $20 \times 100 = 2000$; after, $22 \times 96 = 2112$.
- Conclusion: with inelastic demand, a price rise **raises total revenue**.
- the number and closeness of substitutes;

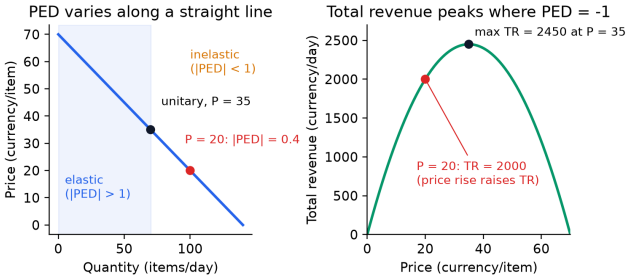
Elasticities of demand (3)

- branding and loyalty;
- the share of income spent on the good;
- whether the good is addictive;

Elasticities of demand (4)

- the time period and how durable the good is.
- YED between 0 and 1: a **normal good** 正常品 that is income inelastic, such as rice in a middle-income country (income up 10%, quantity up 3%: YED $= 0.3$).
- YED above 1: income elastic, such as foreign holidays and cars. As Chinese incomes rose, outbound tourist trips grew from about 10 million in 2000 to about 155 million in 2019.
- YED below 0: an **inferior good** 劣等品, bought less as people get richer, such as long-distance bus tickets once families can afford a car or a high-speed rail fare.

Figure: Elasticities of demand



- On a straight-line demand curve PED changes along the curve; revenue is highest at $P = 35$, where PED is -1
- Read the axes and units first.

Supply

- production costs change (wages, raw materials, energy);
- technology improves;
- the government changes an **indirect tax** — a **specific tax** 从量税 (a fixed amount per unit, like China's fuel tax per litre) or an **ad valorem tax** 从价税 (a percentage of the price, like VAT);

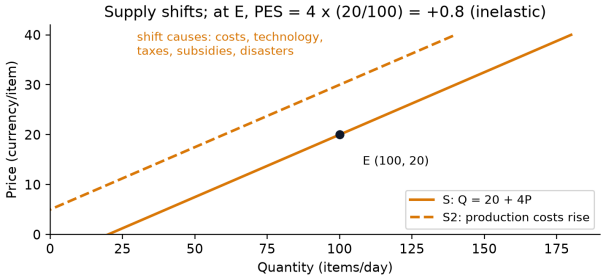
Supply (2)

- the government gives or removes a **subsidy**;
- a natural disaster or disease strikes, as African swine fever did for pork.
- time: in the **short run** 短期 at least one factor (such as land or a factory) is fixed; in the **long run** 长期 all factors can change, so supply becomes more elastic;

Supply (3)

- stocks and perishability: goods that can be stored respond faster;
- how easily workers and machines can move between uses;
- legal limits such as licences or quotas;
- spare capacity.

Figure: Supply



- A rise in production costs shifts supply left; at E the model's PES is $+0.8$
- Match each part of the diagram to the text.

Price determination, surplus and the price mechanism

- Set $Q_d = Q_s$: $140 - 2P = 20 + 4P$, so $120 = 6P$ and $P^* = 20$ yuan.
- Then $Q^* = 140 - 2(20) = 100$ items per day.
- At $P = 15$: $Q_d = 110$ and $Q_s = 80$. There is **excess demand 超额需求** of 30, so buyers compete and the price rises.

Price determination, surplus and the price mechanism (2)

- At $P = 25$: $Q_d = 90$ and $Q_s = 120$. There is **excess supply** 超额供给 of 30, so sellers cut prices.
- Either way the price moves back to 20 along the unchanged curves.
- demand shifts right: price and quantity both rise;

Price determination, surplus and the price mechanism (3)

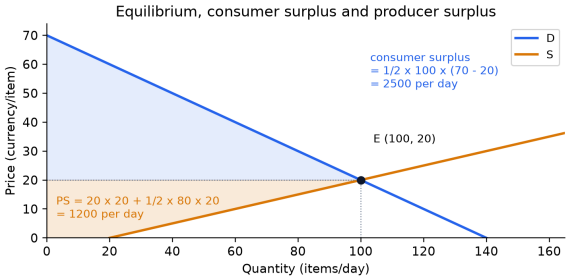
- supply shifts left (swine fever): price rises and quantity falls;
- both shift: one result is certain and the other depends on which shift is bigger. If demand rises while supply falls, price certainly rises, but quantity may go either way.
- The demand curve meets the price axis at $P = 70$ (where $Q_d = 0$). **Consumer surplus** is the triangle under demand and above the price: $CS = \frac{1}{2} \times 100 \times (70 - 20) = 2500$ yuan per day.

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Price determination, surplus and the price mechanism (4)

- The supply curve meets $P = 0$ at $Q = 20$: sellers would supply the first 20 items even at a price of zero. **Producer surplus** is the rectangle plus the triangle below the price and above supply:
  $PS = 20 \times 20 + \frac{1}{2} \times (100 - 20) \times 20 = 400 + 800 = 1200$ yuan per day.
- **Rationing**: a higher price limits buying to those who value pork most; others switch to chicken.
- **Incentive**: higher profits encourage farmers to restock and invest.
- **Signalling**: the price change tells everyone where resources are now most valued.

Figure: Price determination, surplus and the price mechanism



- **Equilibrium** at P = 20, Q = 100: **consumer surplus** 2500 above the price, **producer surplus** 1200 below it
- Match each part of the diagram to the text.

Indirect taxes and subsidies

- New supply in terms of the price consumers pay: $Q_s = 20 + 4(P - 6) = 4P - 4$.
- New **equilibrium**: $140 - 2P = 4P - 4$, so $6P = 144$, $P_c = 24$ yuan and $Q = 140 - 48 = 92$.
- Producers keep $24 - 6 = 18$ yuan.

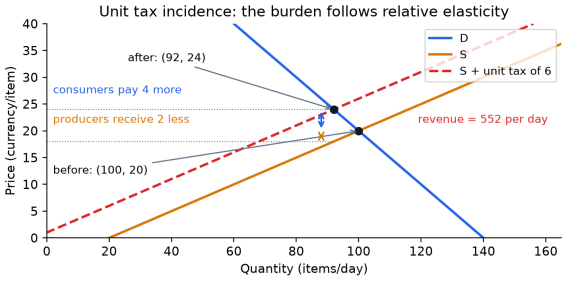
Indirect taxes and subsidies (2)

- Consumers pay $24 - 20 = 4$ yuan more; producers receive $20 - 18 = 2$ yuan less. The tax splits 4 : 2.
- Government revenue $= 6 \times 92 = 552$ yuan per day.
- New supply: $Q_s = 20 + 4(P + 6) = 4P + 44$.

Indirect taxes and subsidies (3)

- New **equilibrium**: $140 - 2P = 4P + 44$, so $P_c = 16$ yuan and $Q = 108$.
- Producers receive $16 + 6 = 22$ yuan.
- Consumers gain 4 yuan per unit; producers gain 2 yuan per unit.
- The cost to taxpayers is $6 \times 108 = 648$ yuan per day.

Figure: Indirect taxes and subsidies



- A 6-yuan tax raises the consumer price from 20 to 24 and cuts the producer price to 18; revenue is 552
- Match each part of the diagram to the text.

Sources for this lesson

- National Bureau of Statistics of China, monthly CPI releases (pork price, October 2019).
- Adam Smith, *The Wealth of Nations* (1776), Book I, chapter 1 (the pin factory).
- R. A. Radford, "The Economic Organisation of a P.O.W. Camp", *Economica* 12 (1945).

Sources for this lesson (2)

- World Bank, *Curbing the Epidemic: Governments and the Economics of Tobacco Control* (1999), on cigarette price elasticity.
- Pearson Edexcel International AS Economics specification (WEC11), Issue 2, sections 1.3.1–1.3.4.

Common errors

- Writing "demand increased" when the price fell. A fall in the good's own price increases the **quantity demanded**: a movement along the curve, not a shift.
- Calling a good with PED -0.4 "elastic" because the number is negative. The size decides: below 1 is inelastic. State whether you report PED with its sign or as an absolute value.
- Saying a price rise always raises revenue. It does only when demand is **price inelastic**.

Common errors (2)

- Drawing a **specific tax** as a pivot. A specific tax shifts supply up in parallel; an **ad valorem tax** pivots it.
- Saying "the firm pays the tax". Legally the firm pays, but the incidence falls on consumers and producers according to the elasticities.
- Treating **opportunity cost** as the money price. It is the next-best alternative given up.

Key terms

- **Opportunity cost**: the benefit of the next-best alternative given up.
- **PPF**: the maximum output combinations with given resources and technology.
- **PED, YED, XED, PES**: percentage change in quantity divided by percentage change in own price, income, another good's price, or own price (for supply).

Key terms (2)

- **Equilibrium**: the price at which quantity demanded equals quantity supplied.
- **Consumer and producer surplus**: the gains to buyers and sellers above what they would have accepted.
- **Tax incidence**: how the burden of a tax is shared between consumers and producers.

Check yourself

- 1.
- Write one positive and one **normative statement** about China's 2015 cigarette tax rise. 2.
- Using a PPF, explain what happened to the US economy in 1942. 3.
- The price of a phone case falls from ¥50 to ¥40 and sales rise from 200 to 260 a week.