Demand, supply and policy

IB DP Economics HL Unit 2 sections 2.1-2.7 full package

Demand, supply and policy

- explain demand and supply, and the difference between movements and shifts;
- find equilibrium, **excess demand** and **excess supply**, and measure consumer and **producer surplus**;
- question the assumption that consumers and firms always maximise;

Demand, supply and policy (2)

- calculate and use price, income and cross elasticities, and **price elasticity of supply**;
- analyse indirect taxes, subsidies and price controls with diagrams and numbers.
- demand: $Q_d = 140 - 2P$;

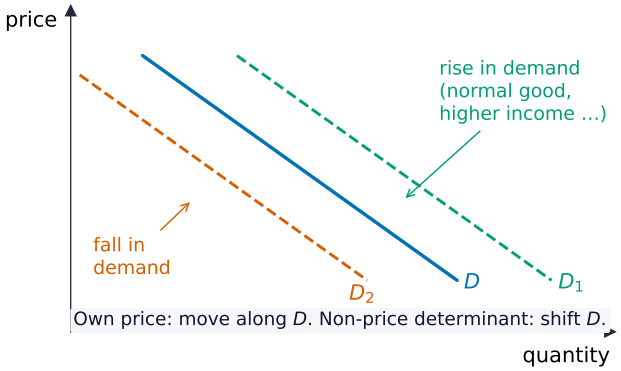
Demand, supply and policy (3)

- supply: $Q_s = 20 + 4P$;
- equilibrium: $P = 20,\ Q = 100$.

Demand and supply

- **Demand** is the quantity of a good that consumers are willing **and able** to buy at each price, over a given period (2.1).
- The **law of demand** says that, other things equal, quantity demanded falls as price rises.
- One explanation is **diminishing marginal utility** : each extra unit gives less extra satisfaction than the one before, so consumers buy more only if the price falls.
- A change in the good's own price causes a **movement along** the demand curve.

Figure: Demand and supply



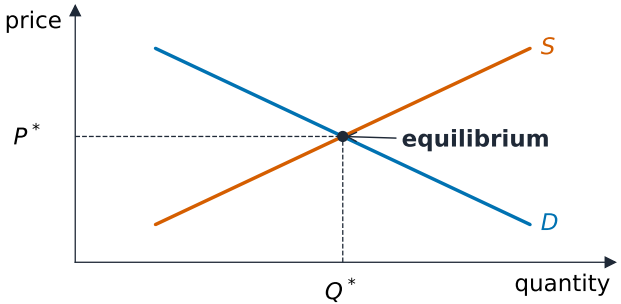
- A price change moves along D; a non-price determinant shifts the whole curve.
- Price on the vertical axis, quantity on the horizontal.

Competitive market equilibrium

- **Equilibrium** is where quantity demanded equals quantity supplied (2.3).
- On the model:
- Away from equilibrium the market corrects itself:
- Prices do three jobs in a free market: they **signal** where resources are wanted, give firms an **incentive** to produce, and **ration** scarce goods to those willing to pay.

$$140 - 2P = 20 + 4P \quad \Rightarrow \quad 6P = 120 \quad \Rightarrow \quad P^* = 20,\ Q^* = 100$$

Figure: Competitive market equilibrium



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

- Equilibrium is where quantity demanded equals quantity supplied.
- Price on the vertical axis, quantity on the horizontal.

Elasticity

- **Income elasticity of demand** (YED) $= \%\Delta Q_d \div \%\Delta$income: positive for normal goods, above 1 for luxuries, negative for inferior goods. Firms use YED to predict sales over the business cycle.
- **Cross elasticity of demand** (XED) $= \%\Delta Q_{d,A} \div \%\Delta P_B$: positive for substitutes, negative for complements. Firms use it to price against rivals.

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

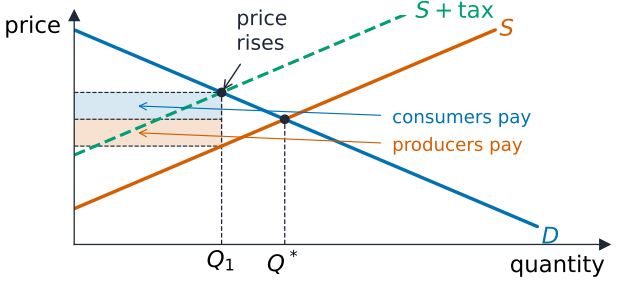
The role of government in microeconomics

- **effectiveness**: does consumption or price change as intended? This depends on elasticity;
- **equity**: who gains and who loses? Indirect taxes take a larger share of poor households' income;
- **efficiency**: does the policy create a **deadweight loss**, or correct one?

The role of government in microeconomics (2)

- **unintended consequences**: black markets, smuggling, firms leaving the market;
- **government failure**: the policy may cost more than the problem it fixes.

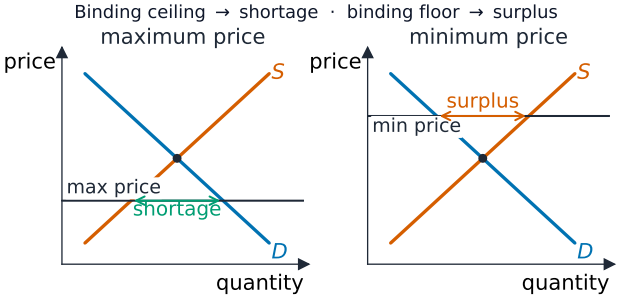
Figure: The role of government in microeconomics



tax: S shifts left · incidence split consumers/producers

- An **indirect tax** shifts supply up; consumers and producers share the burden.
- Price on the vertical axis, quantity on the horizontal.

Figure: The role of government in microeconomics ·



- A binding **maximum price** causes a shortage; a binding **minimum price** causes a surplus.
- Match each part of the diagram to the text.

Data-response practice (Paper 2 style)

- (a) Define *__maximum price__*. [2]
- (b) Using a demand and supply diagram, explain why India's **export ban** raised the world price of rice. [4]
- (c) Calculate the **price elasticity of demand** for rice in Country R and comment on your answer. [2]

Data-response practice (Paper 2 style) (2)

- (d) Using a diagram, explain the effect of the planned **maximum price** on the rice market in Country R. [4]
- (e) Using information from the text and your knowledge of economics, evaluate the use of a maximum price to protect consumers in Country R from higher rice prices. [15]
- **The case for.** Demand is very inelastic ($PED = -0.16$), so the price rise from 0.80 dollars to 1.00 dollars mostly raises spending, not saving. Poor households spend a large share of their income on rice and are hit hardest. A cap at 0.85 dollars lowers the price for everyone who can still buy rice, and it costs the government almost nothing to announce.

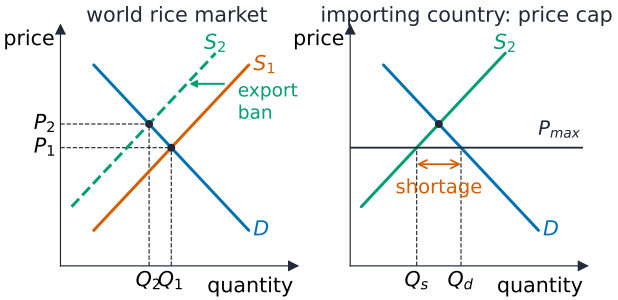
Data-response practice (Paper 2 style) (3)

- **Shortage and black markets.** The shortage of 5.5 thousand tonnes is about 11% of what consumers want. Rice goes to those who queue first or know the sellers, not to those in most need, and black-market prices may rise above 1.00 dollars.
- **Supply falls further.** Country R imports most of its rice and importers pay the world price. If they must sell below what they pay, they import less, and the shortage grows. Local farmers also receive less, so in the long run, when supply is more elastic, they grow less rice.
- **Stakeholders.** Consumers who get rice gain; those who cannot get it lose. Importers and farmers lose income. The government must pay to enforce the cap and to fight the black market.

Data-response practice (Paper 2 style) (4)

- **Alternatives.** The government could pay importers the gap between the world price and 0.85 dollars (about 0.15×48 million kg $= 7.2$ million dollars a month), release rice from a **buffer stock** , cut any import tariff, or give targeted **cash transfers** or food vouchers to poor households. Transfers protect the poor while the price still signals that rice is scarce.
- **Short run and long run.** The ban was temporary (India eased it in 2024). A short, time-limited cap combined with government imports could protect consumers through a temporary shock. A long-lasting cap would damage supply.

Figure: Data-response practice (Paper 2 style)



- Left: the **export ban** shifts world supply left. Right: a **maximum price** below the new equilibrium creates a shortage.
- Match each part of the diagram to the text.

Sources for this lesson

- International Baccalaureate, *Economics guide* (first assessment 2022).
- R. Thaler and C. Sunstein, ***Nudge*** (2008; final edition 2021).
- Food and Agriculture Organization (FAO), *All Rice Price Index* and *Food Price Monitoring*, 2023–2024.
- International Cocoa Organization, *Quarterly Bulletin of Cocoa Statistics*, 2024.

Common errors

- Writing "demand increases" when only the price changed; a price change is a movement along the curve.
- Forgetting "able" in the definition of demand: wanting a good is not enough.
- Reading PED from the slope alone; PED changes along a straight-line demand curve.

Common errors (2)

- Mixing up the total revenue test: with inelastic demand, a price rise **raises** revenue.
- Saying consumers pay all of a tax; **incidence** depends on the elasticities of both curves.
- Drawing a **maximum price** above equilibrium; to bind, it must be below.

Key terms

- **Demand**: the quantity consumers are willing and able to buy at each price over a period.
- **Equilibrium**: the price at which quantity demanded equals quantity supplied.
- **Consumer surplus**: the difference between what consumers are willing to pay and what they pay.

Key terms (2)

- **Price elasticity of demand**: the responsiveness of quantity demanded to a change in price.
- **Incidence**: how the burden of a tax is shared between consumers and producers.
- **Maximum price**: a legal upper limit on price, set below equilibrium.
- **Nudge**: a change to how a choice is presented that changes behaviour without removing options.

Check yourself

- 1.
- On the model, find the **excess demand** at $P = 15$. 2.
- The price rises from 20 to 25.
- Calculate PED and the change in total revenue. 3.