

AS and A Level Economics 9708: full syllabus summary

This is a one-document summary of the whole Cambridge International AS and A Level Economics 9708 course. The first half covers the AS content (basic economic ideas, the price system, government intervention in markets, the macroeconomy and macroeconomic policy). The second half covers the A Level extensions (utility and consumer choice, costs and market structures, the labour market, market failure and equity, macroeconomic theory, and international and development issues). Each section gives the key ideas as bullet points, the definitions you should be able to state precisely in boxes, the diagrams you must be able to draw, and the evaluation points examiners reward. A key terms table and a Quick check with answers are at the end.

Use this summary for revision and for checking gaps. When a section feels thin, go back to the full topic notes for that area on our A Level Economics page.

How the course and exams work

- The AS Level is assessed by a multiple-choice paper and a data response and essay paper. The full A Level adds a second multiple-choice paper and a second data response and essay paper on the A Level content, which assumes knowledge of the AS content as well.
- Multiple-choice questions test precise definitions, diagram shifts and calculations (elasticities, multipliers, costs and revenues). Learn the definitions word for word.
- Data response questions reward using the figures in the extract: calculate a change, quote a number, then explain it with theory.
- Essays are marked for knowledge, application, analysis and evaluation. Evaluation means reaching a supported judgement: "it depends on..." is only worth credit when you say what it depends on and why.
- Check the current syllabus document on the Cambridge website for the exact paper timings, mark allocations and the examination years it covers, as these are updated from time to time.

Exam tip: the four skills

Knowledge and understanding: accurate definitions and correct diagrams. **Application:** using the context and data in the question. **Analysis:** developed chains of reasoning, step by step, linked to a diagram. **Evaluation:** weighing up, considering assumptions, short run against long run, and reaching a justified conclusion.

AS Level

Sections 1 to 5 cover the AS content. All of it is also assumed knowledge for the A Level papers.

1. Basic economic ideas and resource allocation

Scarcity, choice and opportunity cost



- Wants are unlimited but resources are limited, so every society faces the basic economic problem of scarcity.
- Scarcity forces choice, and every choice has an opportunity cost.
- All economies must answer three questions: what to produce, how to produce it and for whom to produce it.

Scarcity: the situation in which there are not enough resources to satisfy all wants.

Opportunity cost: the value of the next best alternative forgone when a choice is made.

Economic methodology

- **Positive statements** can be tested against evidence ("a rise in the minimum wage reduced youth employment"). **Normative statements** contain value judgements ("the government should raise the minimum wage").
- **Ceteris paribus** means "other things being equal": economists change one variable at a time in a model.
- Time periods: the **short run** is when at least one factor of production is fixed; the **long run** is when all factors are variable; the **very long run** is when technology itself can change.
- Economic models simplify reality using assumptions. A good evaluation point is to question whether the assumptions hold.

Factors of production

- **Land** (natural resources), reward: rent.
- **Labour** (human effort, physical and mental), reward: wages.
- **Capital** (man-made goods used to produce other goods, such as machines and buildings), reward: interest.
- **Enterprise** (organising the other factors and bearing risk), reward: profit.
- **Division of labour** (specialisation of workers in particular tasks) raises productivity through practice, time saving and the use of specialist machinery, but can cause boredom, low motivation and dependence on other workers.

Resource allocation in different economic systems

- **Market economy:** resources are allocated by the price mechanism and private ownership. Strengths: choice, efficiency, incentives, innovation. Weaknesses: inequality, under-provision of public and merit goods, over-provision of demerit goods, externalities.
- **Planned (command) economy:** the state owns most resources and decides what is produced. Strengths: can provide basic needs and reduce inequality. Weaknesses: information problems, weak incentives, shortages and surpluses, little choice.
- **Mixed economy:** both the private sector and the public sector allocate resources. All real economies are mixed; the debate is about the balance.
- **Transition** from planned to market systems involves privatisation, removal of price controls and opening to trade, and can bring short-run unemployment and inflation.

Production possibility curves (PPC)

- A PPC shows the maximum combinations of two goods an economy can produce with its resources fully and efficiently employed.
- A point on the curve is productively efficient; a point inside shows unemployed or inefficiently used resources; a point outside is unattainable now.
- Moving along the curve shows opportunity cost. The curve is usually drawn concave to the origin (bowed out) because resources are not equally suited to every use, so opportunity cost increases as more of one good is produced. A straight line PPC means constant opportunity cost.
- An outward shift shows economic growth (more or better resources, better technology). An inward shift shows a fall in productive capacity (war, natural disaster, emigration).
- Producing more capital goods now can shift the PPC further outwards in the future, at the cost of fewer consumer goods today.

Diagram: good X on one axis and good Y on the other; a bowed-out curve; points A and B on the curve, C inside, D outside; an outward shift for growth.

Classification of goods

- **Free goods** have no opportunity cost (air in most places). **Economic goods** are scarce and have an opportunity cost.
- **Private goods** are excludable and rival.
- **Public goods** are non-excludable and non-rival (street lighting, national defence). The free rider problem means a market may not provide them at all. Some goods are quasi-public (roads can become rival when congested, and can be made excludable with tolls).
- **Merit goods** are under-consumed in a free market because consumers underestimate their benefits (information failure) and they often generate positive externalities (education, healthcare, vaccination).
- **Demerit goods** are over-consumed because consumers underestimate their harm, and they often generate negative externalities (tobacco, alcohol, sugary drinks).

Public good: a good that is non-excludable (people cannot be prevented from consuming it) and non-rival (consumption by one person does not reduce the amount available to others).

Merit good: a good that is more beneficial to consumers than they realise, and so is under-consumed in a free market.

2. The price system and the microeconomy

Demand

- Demand is the quantity of a good consumers are willing and able to buy at each price in a given time period. Effective demand must be backed by the ability to pay.
- The demand curve slopes downwards because of the income effect and the substitution effect of a price change (and diminishing marginal utility, at A Level).
- A change in the good's own price causes a **movement along** the curve (extension or contraction).

- A **shift** is caused by changes in income, prices of substitutes and complements, tastes and fashion, advertising, population and its age structure, expectations, and credit conditions.
- Individual demand curves add horizontally to give market demand.

Supply

- Supply is the quantity producers are willing and able to sell at each price in a given time period. The supply curve slopes upwards because higher prices make production more profitable and cover rising marginal costs.
- Shifts are caused by costs of production, technology, indirect taxes and subsidies, the number of firms, weather (for agriculture), prices of goods in joint supply and expectations.

Price elasticities

Price elasticity of demand (PED) = percentage change in quantity demanded ÷ percentage change in price.

Income elasticity of demand (YED) = percentage change in quantity demanded ÷ percentage change in income.

Cross elasticity of demand (XED) = percentage change in quantity demanded of good A ÷ percentage change in price of good B.

Price elasticity of supply (PES) = percentage change in quantity supplied ÷ percentage change in price.

- **PED** is negative (the sign is often ignored when describing size). Elastic: greater than 1. Inelastic: less than 1. Unitary: 1. Perfectly inelastic: 0. Perfectly elastic: infinity.
- Determinants of PED: number and closeness of substitutes, proportion of income spent, whether the good is a necessity or habit-forming, how widely the good is defined, and time (demand is more elastic in the long run).
- **PED and total revenue:** if demand is price elastic, a price cut raises revenue; if inelastic, a price rise raises revenue; at unitary elasticity revenue does not change. Elasticity varies along a straight-line demand curve.
- **YED:** positive for normal goods, negative for inferior goods. Above 1 means income elastic (often called luxuries); between 0 and 1 means income inelastic (necessities).
- **XED:** positive for substitutes, negative for complements, zero for unrelated goods. The larger the value, the closer the relationship.
- **PES** depends on time, spare capacity, stock levels, ease of factor substitution and the length of the production process.
- Uses: firms use PED for pricing, YED for planning during booms and recessions, XED for reacting to rivals. Governments use PED to predict tax revenue and the incidence of taxes.
- Limitations: estimates are based on past data, ceteris paribus rarely holds, and values change over time.

Worked example: PED

Price rises from \$20 to \$22 (a 10% increase). Quantity demanded falls from 500 to 440 (a 12%

fall). $PED = -12 \div 10 = -1.2$, so demand is price elastic. Revenue falls from \$10 000 to \$9 680, as predicted.

Market equilibrium and the price mechanism

- Equilibrium is where quantity demanded equals quantity supplied, so there is no tendency for price to change.
- Excess demand (shortage) pushes the price up; excess supply (surplus) pushes the price down.
- The price mechanism has three functions: **signalling** (prices give information to buyers and sellers), **incentive** (higher prices encourage firms to produce more) and **rationing** (higher prices limit demand to the available supply).
- Related markets: **joint demand** (complements, such as cars and petrol), **alternative or competitive demand** (substitutes), **derived demand** (demand for a factor comes from demand for the product), **joint supply** (beef and leather) and **composite demand** (one good with several uses, such as milk for butter and cheese).

Diagram: a supply and demand cross; shift one curve, show the new equilibrium, and state clearly the changes in price and quantity. When both curves shift, the effect on either price or quantity is uncertain and depends on the relative size of the shifts.

Consumer and producer surplus

Consumer surplus: the difference between the price consumers are willing to pay and the price they actually pay. It is the area below the demand curve and above the price.

Producer surplus: the difference between the price producers receive and the minimum price at which they are willing to supply. It is the area above the supply curve and below the price.

- A rise in price reduces consumer surplus and increases producer surplus. Government intervention can be analysed by showing which areas are gained, transferred or lost (deadweight loss).

3. Government microeconomic intervention

Why governments intervene

- To correct market failure (public goods, merit and demerit goods, externalities, information failure), to reduce inequality, to stabilise prices and to protect consumers and workers.

Maximum and minimum prices

- A **maximum price** (price ceiling) set below equilibrium aims to make a good affordable (rent controls, food staples). It causes excess demand, queues, rationing and possibly black markets, and may reduce supply and quality in the long run.
- A **minimum price** (price floor) set above equilibrium aims to raise producers' incomes or discourage consumption (minimum alcohol prices, agricultural price support, minimum wages). It causes excess supply, which the government may have to buy and store.
- Evaluation: effects depend on how far the price is from equilibrium and on the elasticities of demand and supply.

Indirect taxes and subsidies

- A **specific (unit) tax** shifts supply upwards by the same amount at every output (parallel shift). An **ad valorem tax** is a percentage of the price, so the shift gets wider as price rises.
- **Incidence:** the more price inelastic demand is, the larger the share of the tax paid by consumers. The more price inelastic supply is, the larger the share paid by producers.
- Government tax revenue is the tax per unit multiplied by the new quantity. A tax also creates a deadweight loss unless it corrects a negative externality.
- A **subsidy** shifts supply downwards (to the right). Price falls and output rises. The benefit is shared between consumers and producers depending on elasticities. The cost to the government is the subsidy per unit multiplied by the new quantity.
- Evaluation: taxes raise revenue and discourage demerit goods but are regressive and may encourage smuggling; subsidies encourage merit goods but have an opportunity cost and can make firms inefficient or dependent.

Diagram: for a specific tax, draw S and $S + \text{tax}$ parallel; mark the new price paid by consumers, the price received by producers (new price minus tax), and shade the tax revenue rectangle split into the consumer and producer shares.

Other forms of intervention

- **Direct provision** of public and merit goods, financed by taxation. Problems: cost, opportunity cost, possible inefficiency without the profit motive.
- **Regulation** and legislation (bans, age limits, safety standards). Problems: enforcement cost, black markets.
- **Information provision** (health warnings, labelling) to correct information failure.
- **Nationalisation and privatisation:** transferring ownership between public and private sectors, with arguments about efficiency, prices, investment and equity.
- **Buffer stock schemes** buy in good years and sell in bad years to stabilise commodity prices and incomes. They are expensive to store and may collapse if the target price is set too high.

Unintended consequences

- Interventions can create new problems: black markets, reduced supply, dependency, administrative costs and distortions of incentives. This is a key evaluation point and leads to the A Level idea of government failure.

4. The macroeconomy

Macroeconomic objectives

- Sustained economic growth, low and stable inflation, low unemployment (full employment), and a sustainable balance of payments position. Some governments also target a fair distribution of income and environmental sustainability.

Aggregate demand and aggregate supply

Aggregate demand (AD): the total planned spending on an economy's goods and services at

each price level. $AD = C + I + G + (X - M)$.

Aggregate supply (AS): the total output that producers in an economy are willing and able to supply at each price level.

- The AD curve slopes downwards because a lower price level raises the real value of wealth, makes exports more competitive and reduces interest rates.
- AD shifts with consumer confidence, interest rates, wealth, taxes, government spending, exchange rates and incomes abroad.
- **Short-run AS** slopes upwards and shifts with costs of production (wages, raw material prices, indirect taxes).
- **Long-run AS** shows productive capacity. In the classical view it is vertical at full employment output. In the Keynesian view it is horizontal at low output (spare capacity), then curves upwards, then becomes vertical at full employment.
- LRAS shifts right with more or better quality factors of production, technology and productivity improvements.

Diagram: price level on the vertical axis, real output (real GDP) on the horizontal axis; AD downward sloping, SRAS upward sloping, LRAS vertical. Show demand-side shocks (AD shifts) and supply-side shocks (SRAS shifts).

Economic growth

- Actual growth is an increase in real GDP. Potential growth is an increase in productive capacity.
- Causes: rising AD in the short run; investment, technology, education and training, and more labour in the long run.
- Benefits: higher living standards, more tax revenue, lower unemployment. Costs: environmental damage, resource depletion, inflation if too fast, inequality.

Inflation and deflation

Inflation: a sustained increase in the general price level over a period of time.

Deflation: a sustained fall in the general price level.

Disinflation: a fall in the rate of inflation, so prices are still rising but more slowly.

- Measured with a consumer prices index (CPI). Steps: a base year, a household expenditure survey to set weights, a basket of goods, price collection, weighted index calculation.
- Real values remove the effect of inflation; nominal (money) values do not.
- **Demand-pull inflation:** AD rises faster than output when the economy is near capacity. **Cost-push inflation:** rising costs (wages, imported raw materials, a weaker currency) shift SRAS left.
- Consequences: falling purchasing power, redistribution from savers and lenders to borrowers, menu and shoe leather costs, loss of international competitiveness, uncertainty that reduces investment, and fiscal drag.
- Deflation can be harmful if it comes from falling demand (consumers delay purchases, real debt burdens rise) but benign if it comes from rising productivity.

Employment and unemployment

Unemployment: people who are willing and able to work, and actively seeking work, but who do not have a job.

Unemployment rate = $\text{number unemployed} \div \text{labour force} \times 100$.

- Measured by a labour force survey (using an international definition) or a claimant count (people receiving unemployment benefit). The claimant count usually understates unemployment because not everyone can or does claim.
- Types: **frictional** (between jobs), **structural** (decline of industries, mismatch of skills or location), **cyclical or demand-deficient** (lack of AD in a downturn), **seasonal** and **technological**.
- Consequences: lost output, lower tax revenue and higher benefit spending, loss of skills, poverty, social problems.

The balance of payments

- The balance of payments records all transactions between a country's residents and the rest of the world.
- **Current account:** trade in goods, trade in services, primary income (wages, interest, profits and dividends) and secondary income (transfers such as remittances and foreign aid).
- **Financial account:** direct investment, portfolio investment and changes in reserves. A capital account records smaller items such as debt forgiveness.
- A current account deficit is caused by low competitiveness, a strong exchange rate, high domestic demand for imports or weak demand abroad. Its importance depends on its size, its cause and how it is financed.

Exchange rates

- An exchange rate is the price of one currency in terms of another.
- **Floating:** set by supply and demand for the currency. Demand comes from foreign buyers of exports, foreign investors and speculators. Supply comes from domestic buyers of imports and outward investment.
- **Fixed:** the central bank holds the rate at a set level by buying and selling currency or changing interest rates. **Managed float:** the rate floats but the central bank intervenes to limit movements.
- Depreciation makes exports cheaper abroad and imports dearer at home. It can improve the current account and raise AD, but it can also cause cost-push inflation.

Terms of trade and international trade

Terms of trade = $\text{index of average export prices} \div \text{index of average import prices} \times 100$.

Comparative advantage: a country has a comparative advantage in a good when it can produce it at a lower opportunity cost than another country.

- **Absolute advantage:** producing more of a good with the same resources. Trade based on comparative advantage can benefit both countries even if one has an absolute advantage in

both goods.

- Assumptions: constant opportunity costs, no transport costs, perfect factor mobility within countries, and free trade. These are useful evaluation points.
- A rise in the terms of trade is "favourable" in that each unit of exports buys more imports, but it may reduce competitiveness if export prices rise.
- **Protectionism:** tariffs, quotas, export subsidies, embargoes, and administrative barriers. Arguments for: protecting infant industries, strategic industries, jobs, preventing dumping and raising revenue. Arguments against: higher prices, less choice, inefficiency, retaliation and loss of the gains from trade.

Diagram: a tariff on a world supply and domestic supply diagram; show the rise in price, the fall in imports, the rise in domestic production, the government's tariff revenue and the two deadweight loss triangles.

5. Government macroeconomic intervention

Fiscal policy

Fiscal policy: the use of government spending and taxation to influence aggregate demand and the economy.

Budget deficit: government spending is greater than tax revenue in a year. **Budget surplus:** tax revenue is greater than spending.

- Expansionary fiscal policy (higher spending or lower taxes) raises AD. Contractionary fiscal policy reduces AD.
- Taxes can be **direct** (on income and wealth) or **indirect** (on spending). They can be **progressive** (the proportion paid rises as income rises), **proportional** or **regressive** (the proportion paid falls as income rises).
- Principles of a good tax: equity, certainty, convenience, economy of collection, efficiency and flexibility.
- **Automatic stabilisers** (progressive taxes and unemployment benefits) moderate the economic cycle without new decisions. **Discretionary policy** needs deliberate changes.
- Evaluation: time lags, crowding out of private investment if borrowing pushes up interest rates, the size of the multiplier, the state of the economy, and the national debt.

Monetary policy

Monetary policy: the use of interest rates, the money supply and the exchange rate (usually by the central bank) to influence the economy.

- Lower interest rates reduce the cost of borrowing and the reward for saving, so consumption and investment rise; they also tend to weaken the currency, which helps exports.
- Quantitative easing (the central bank buying financial assets to increase the money supply) can be used when interest rates are already close to zero.

- Evaluation: time lags, low confidence may stop borrowing even at low rates, effects differ between groups (borrowers gain, savers lose), and rates cannot easily go far below zero.

Supply-side policy

Supply-side policy: policy that aims to increase the productive capacity of the economy by improving the quantity or quality of factors of production, shifting LRAS to the right.

- **Interventionist (market-correcting):** spending on education and training, infrastructure, research and development, and regional policy.
- **Market-based:** lower income and corporation taxes, deregulation, privatisation, labour market reform, and reducing trade union power.
- Evaluation: long time lags, cost to the government, possible rise in inequality, but the only policy type that raises output without raising inflation in the long run.

Policies to correct a balance of payments deficit

- **Expenditure-switching policies** switch spending from imports to domestic goods: devaluation or depreciation, tariffs and quotas.
- **Expenditure-reducing policies** reduce total spending, and so imports: contractionary fiscal and monetary policy. They cost jobs and growth.
- Supply-side policies raise competitiveness in the long run.

Conflicts between objectives

- Rapid growth can raise inflation and worsen the current account. Reducing inflation through higher interest rates can raise unemployment. Every policy choice involves trade-offs, which is a strong evaluation theme.

A Level

The A Level sections build on everything above. Expect questions that combine topics, for example the effect of a minimum wage in a monopsony labour market, or whether a subsidy corrects a positive externality without causing government failure.

6. Utility and consumer choice

Marginal utility theory

Total utility: the total satisfaction gained from consuming a given quantity of a good.

Marginal utility: the additional satisfaction gained from consuming one more unit of a good.

Law of diminishing marginal utility: as a consumer consumes more units of a good, the marginal utility from each additional unit eventually falls.

- Total utility is maximised when marginal utility is zero.
- **Equi-marginal principle:** a rational consumer with limited income maximises total utility when

the marginal utility per dollar is equal for all goods: $MU_A/P_A = MU_B/P_B$.

- **Deriving the demand curve:** if the price of A falls, MU_A/P_A rises above MU_B/P_B , so the consumer buys more A until MU_A falls enough to restore equality. Lower price, higher quantity demanded: a downward-sloping demand curve.
- Limitations: utility cannot be measured, consumers do not calculate marginal utilities, habits and impulse buying, and behavioural economics shows that people are not always rational (bounded rationality, bounded self-control, biased choices).

Budget lines and indifference curves

- A **budget line** shows all combinations of two goods a consumer can buy with a given income at given prices. Its gradient is the ratio of the prices.
- A rise in income shifts the budget line outwards in parallel. A fall in the price of one good pivots it outwards along that good's axis.
- An **indifference curve** shows combinations of two goods giving the same total utility. Curves are convex to the origin (diminishing marginal rate of substitution), never cross, and higher curves mean more utility.
- The consumer's optimum is where the budget line is tangential to the highest attainable indifference curve.
- A price change can be split into the **substitution effect** (always increases quantity demanded when price falls) and the **income effect** (increases quantity for a normal good, decreases it for an inferior good).
- **Normal good:** both effects work in the same direction. **Inferior good:** the income effect works against the substitution effect but is smaller, so demand still rises when price falls. **Giffen good:** the income effect is larger than the substitution effect, so demand falls when price falls (an upward-sloping demand curve, very rare, usually linked to staple foods for very poor consumers).

Diagram: quantity of good X and quantity of good Y on the axes; budget line pivoting outwards when the price of X falls; draw a hypothetical budget line parallel to the new one but tangent to the original indifference curve, to separate the substitution effect from the income effect.

7. Costs, revenue, market structures and the growth of firms

Short-run costs

- **Fixed costs** do not change with output in the short run (rent, insurance). **Variable costs** change with output (raw materials, hourly wages).
- Total cost = total fixed cost + total variable cost. Average cost = total cost ÷ output. Marginal cost = change in total cost from producing one more unit.
- The **law of diminishing returns** (diminishing marginal returns): when more of a variable factor is added to a fixed factor, the marginal product of the variable factor eventually falls. This makes short-run marginal cost and average variable cost curves U-shaped.
- The marginal cost curve cuts the average variable cost and average total cost curves at their minimum points.

Long-run costs and economies of scale

Economies of scale: the fall in long-run average cost as a firm increases its scale of production.

Diseconomies of scale: the rise in long-run average cost as a firm grows beyond a certain size.

- **Internal economies of scale:** technical (larger, more efficient machines; the container principle), purchasing (bulk buying), marketing, financial (cheaper borrowing), managerial (specialist managers) and risk-bearing (diversification).
- **External economies of scale** come from the growth of the whole industry in an area: skilled labour pools, specialist suppliers, shared infrastructure. They shift the whole LRAC curve down.
- **Diseconomies of scale:** communication and coordination problems, low worker motivation, control problems.
- **Minimum efficient scale:** the lowest output at which LRAC is at its minimum.
- The LRAC curve is an envelope of short-run average cost curves.

Revenue and profit

- Total revenue = price $\times$ quantity. Average revenue = total revenue $\div$ quantity = price. Marginal revenue = change in total revenue from selling one more unit.
- If the firm is a price taker, AR = MR and both are horizontal. If the firm faces a downward-sloping demand curve, MR falls twice as steeply as AR (for a straight line) and total revenue is maximised where MR = 0.
- **Normal profit** is the minimum profit needed to keep the firm in the industry; it is included in costs, so it is where AR = AC. **Supernormal (abnormal) profit** is profit above normal profit (AR > AC). A **loss** means AR < AC.
- **Profit maximisation** occurs where MC = MR (with MC rising).
- **Shutdown:** in the short run, a firm stays open if price covers average variable cost; in the long run it must cover average total cost.

Market structures

Feature	Perfect competition	Monopolistic competition	Oligopoly	Monopoly
Number of firms	Very many	Many	A few dominant firms	One (or one dominant firm)
Product	Homogeneous	Differentiated	Homogeneous or differentiated	Unique, no close substitutes
Barriers to entry	None	Low	High	Very high
Price setting	Price taker	Some price-making power	Interdependent	Price maker
Long-run profit	Normal only	Normal only	Supernormal possible	Supernormal possible

Information	Perfect	Imperfect	Imperfect	Imperfect
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Perfect competition

- The firm takes the price set in the industry; its demand curve is horizontal ($AR = MR = \text{price}$).
- In the short run firms can make supernormal profit or losses. Supernormal profit attracts new firms, industry supply rises, price falls until only normal profit is made. Losses cause firms to leave until price rises back to minimum average cost.
- In long-run equilibrium $P = MC$ (allocative efficiency) and $P = \text{minimum AC}$ (productive efficiency).
- Criticisms: unrealistic assumptions, no supernormal profit to fund research, so little dynamic efficiency.

Monopoly

- A pure monopoly is a single seller. In practice, competition authorities may investigate a firm with a large market share.
- Barriers to entry: economies of scale, legal barriers (patents, licences), control of raw materials, high sunk costs, brand loyalty, and anti-competitive practices.
- Profit maximised at $MC = MR$; price read from the AR curve. Supernormal profit can last into the long run.
- Compared with perfect competition: higher price, lower output, allocative inefficiency ($P > MC$), productive inefficiency (not at minimum AC), loss of consumer surplus and a deadweight loss, possible X-inefficiency.
- Possible benefits: economies of scale may give lower costs than many small firms; supernormal profit can fund research and development (dynamic efficiency); a **natural monopoly** arises where one firm can supply the whole market at lower cost than two or more (water networks, rail track).

Diagram: AR and MR downward sloping, MC and AC curves; output where $MC = MR$, price up to AR; shade supernormal profit $(P - AC) \times Q$.

Monopolistic competition

- Many firms, differentiated products, low barriers. Each firm has a downward-sloping demand curve, so some price-making power.
- Short run: supernormal profit possible. Long run: new entrants take customers, each firm's demand curve shifts left until it is tangential to AC, so only normal profit remains.
- Long-run outcome: $P > MC$ and output below the minimum AC point (excess capacity), but consumers gain from variety.

Oligopoly

- A few large firms dominate; each firm's decisions depend on how rivals react (interdependence).
- **Kinked demand curve model:** if a firm raises its price, rivals do not follow (demand is elastic above the current price); if it cuts its price, rivals follow (demand is inelastic below it). This explains price rigidity. MR has a vertical gap at the kink, so MC can change within the gap without changing price or output. Weakness: it does not explain how the original price was set.

- **Non-price competition:** advertising, branding, loyalty schemes, quality and after-sales service.
- **Collusion:** formal (cartels) or tacit (price leadership). Collusion raises prices and profits, but cartels are often illegal and unstable because each member has an incentive to cheat.
- **Game theory:** a payoff matrix shows the outcomes of each firm's choices. In a prisoners' dilemma, each firm's dominant strategy (for example, to cut price) leads to an outcome worse for both than cooperation would be.
- **Concentration ratio:** the combined market share of the largest n firms (for example, a four-firm concentration ratio).

Contestable markets

- A perfectly contestable market has no barriers to entry or exit and no sunk costs. The threat of hit-and-run entry forces incumbent firms to keep prices close to average cost even if there are few firms.
- Policy implication: removing barriers to entry can matter more than the number of firms.

Efficiency

Productive efficiency: producing at the lowest possible average cost (the minimum point of the AC curve).

Allocative efficiency: producing the combination of goods consumers value most, where price equals marginal cost ($P = MC$).

Dynamic efficiency: improvements in efficiency over time through innovation and investment.

X-inefficiency: producing above the lowest possible cost curve because of a lack of competitive pressure.

Price discrimination

- Charging different prices to different consumers for the same product, for reasons not related to cost.
- Conditions: the firm must have price-making power, be able to separate the markets, prevent resale between markets, and the markets must have different PEDs.
- The firm charges a higher price in the market with more inelastic demand.
- Evaluation: higher profits and a loss of consumer surplus for some, but some consumers (students, off-peak travellers) can now afford the good, and the extra profit may fund investment.

Growth and objectives of firms

- **Internal (organic) growth:** expanding from within, by investing and increasing sales.
- **External growth:** mergers and takeovers. **Horizontal integration** joins firms at the same stage of production (economies of scale, market power). **Vertical integration** joins firms at different stages: backward towards suppliers or forward towards customers (control of supply and outlets). **Conglomerate integration** joins firms in unrelated industries (spreads risk).
- Why some firms stay small: small markets, personal service, owners' wishes, limited finance, and niche products.

- **Objectives:** profit maximisation ($MC = MR$); revenue maximisation ($MR = 0$); sales volume maximisation (as large an output as possible while still covering costs, where $AR = AC$); satisficing (making enough profit to keep shareholders content while pursuing other aims); survival; growth; social and environmental goals.
- The **principal-agent problem:** owners (principals) and managers (agents) may have different goals, which is why many large firms do not simply maximise profit.

8. Market failure, efficiency and equity

Efficiency and market failure

Market failure: a situation in which the free market leads to a misallocation of resources, so that the outcome is not allocatively efficient.

Pareto optimality: an allocation of resources in which it is impossible to make anyone better off without making someone else worse off.

Externalities

Externality: a cost or benefit to a third party that is not reflected in the market price.

Social cost = private cost + external cost. **Social benefit** = private benefit + external benefit.

- **Negative production externality** (pollution from a factory): marginal social cost lies above marginal private cost. The free market produces where $MPC = MPB$, which is more than the socially optimal output where $MSC = MSB$. There is a welfare (deadweight) loss triangle.
- **Positive consumption externality** (vaccination, education): marginal social benefit lies above marginal private benefit, so the good is under-consumed.
- The socially optimal output is where $MSC = MSB$.

Diagram: quantity on the horizontal axis, costs and benefits on the vertical axis; $MPB = MSB$ downward sloping; MPC below MSC ; mark the market output Q_m and the social optimum Q_s ; shade the welfare loss triangle between Q_s and Q_m .

Information failure

- **Asymmetric information:** one party knows more than the other (used car sellers, insurance buyers).
- **Adverse selection:** the party with less information attracts the wrong type of customer (high-risk people are most keen to buy insurance).
- **Moral hazard:** people take more risk because they do not bear the full cost (an insured person takes less care).

Policies to correct market failure

- **Indirect taxes** equal to the marginal external cost (a Pigouvian tax) shift MPC up to MSC . Problem: the external cost is hard to measure.
- **Subsidies** for goods with positive externalities shift supply to the right.

- **Regulation** (emission limits, bans, compulsory schooling). Problem: monitoring and enforcement costs.
- **Tradable pollution permits**: the government sets a cap on total pollution and issues permits that firms can buy and sell. Low-cost cleaners sell permits; the price of permits gives an incentive to cut pollution. Problems: setting the cap, initial allocation, monitoring.
- **Extension of property rights**: if someone owns the resource, they can charge for its use or seek compensation.
- **Information provision and behavioural nudges** (default options, clear labelling).
- **Cost-benefit analysis** for public projects: identify all private and external costs and benefits, put money values on them (including shadow prices for items with no market price), discount future values, and compare. Problems: valuing intangibles such as lives saved or time, predicting the future, and choosing the discount rate.

Government failure

Government failure: when government intervention leads to a less efficient allocation of resources than before the intervention.

- Causes: imperfect information, administrative costs, unintended consequences, political motives and short-termism, regulatory capture, and the creation of black markets.

Equity and the redistribution of income and wealth

- **Equity** means fairness; **equality** means an equal share. Horizontal equity treats people in the same situation the same way; vertical equity treats people in different situations differently (people with higher incomes pay more tax).
- **Income** is a flow; **wealth** is a stock of assets. Wealth is usually more unequally distributed than income.
- **Lorenz curve**: plots the cumulative percentage of income against the cumulative percentage of households. The further the curve from the 45-degree line of equality, the greater the inequality.
- **Gini coefficient** = area between the line of equality and the Lorenz curve ÷ total area under the line of equality. It ranges from 0 (perfect equality) to 1 (perfect inequality).
- **Absolute poverty**: income too low to meet basic needs. **Relative poverty**: income well below the average in a society (often defined as below a set fraction of median income).
- Policies: progressive taxation, means-tested and universal benefits, transfer payments, minimum wages, free or subsidised education and healthcare, wealth and inheritance taxes, and a negative income tax.
- **Means-tested benefits** target those most in need but can cause the poverty trap (losing benefits and paying tax as income rises leaves little gain from working more). **Universal benefits** are simple and avoid stigma but are costly and go to people who do not need them.
- Evaluation: the trade-off between equity and efficiency; high taxes may reduce incentives to work and invest.

9. The labour market

Demand for labour

- The demand for labour is a **derived demand**: it depends on demand for the goods and services that labour produces.
- **Marginal revenue product (MRP)** = marginal physical product $\times$ marginal revenue. In a competitive product market, $MR = \text{price}$, so $MRP = MPP \times P$.
- A profit-maximising firm employs workers up to the point where $MRP = \text{the marginal cost of labour}$ (the wage in a competitive labour market). The MRP curve is the firm's demand curve for labour.
- Demand for labour shifts with productivity, the price of the product, demand for the product, and the price of capital that could substitute for labour.
- The elasticity of demand for labour is higher when labour is easily replaced by capital, when labour is a large share of total costs, when demand for the product is elastic, and over a longer time.

Supply of labour

- The supply of labour to an occupation depends on the wage, non-wage benefits (job security, holidays, working conditions), qualifications and training needed, and the attractiveness of the job.
- Individual labour supply can bend backwards: at high wages, the income effect (more leisure is affordable) may outweigh the substitution effect (leisure becomes more expensive), so hours worked fall.
- Total labour supply in an economy depends on population size and age structure, participation rates, migration, and the retirement age.

Wage determination

- **Competitive labour market**: the wage is set where the supply of and demand for labour are equal. Each firm is a wage taker.
- **Monopsony**: a single (or dominant) employer. Its marginal cost of labour lies above the supply curve (average cost of labour) because hiring one more worker means paying all workers the higher wage. It employs where $MCL = MRP$ and pays the wage on the supply curve, so wages and employment are lower than in a competitive market.
- **Trade unions** bargain collectively. In a competitive market a union wage above equilibrium may cause unemployment. In a monopsony, a union (or a minimum wage) set at the right level can raise both the wage and employment.
- **National minimum wage**: evaluate by elasticities of labour demand and supply, the type of labour market, the level set relative to the market wage, effects on poverty and incentives, and possible inflation.
- **Wage differentials** arise from differences in skills and training, productivity, demand for the product, non-monetary benefits, discrimination, union power, geographical immobility and occupational immobility.

Transfer earnings and economic rent

Transfer earnings: the minimum payment a factor of production needs to keep it in its current

use.

Economic rent: any payment to a factor of production above its transfer earnings.

- On a labour market diagram, transfer earnings are the area under the supply curve up to the quantity employed; economic rent is the area above the supply curve and below the wage.
- The more inelastic the supply of labour (rare skills, as with top footballers), the larger the share of earnings that is economic rent.

10. Macroeconomic theory

National income statistics

Gross domestic product (GDP): the total value of goods and services produced within a country in a given time period.

Gross national income (GNI) = GDP + net primary income from abroad.

Net national income (NNI) = GNI – depreciation (capital consumption).

- Three methods of measurement: output, income and expenditure. In theory they give the same total, because one person's spending is another person's income.
- Market prices include indirect taxes and subsidies; basic prices (factor cost) remove them: basic prices = market prices – indirect taxes + subsidies.
- **Real GDP** adjusts nominal GDP for inflation. **GDP per capita** divides by population. **Purchasing power parity (PPP)** exchange rates adjust for differences in the cost of living, so international comparisons are fairer.
- Limitations as a measure of living standards: the hidden (informal) economy, non-marketed output (housework, volunteering), inequality, leisure time, quality of goods, environmental damage, and defence spending that does not raise welfare.
- Alternative measures: the **Human Development Index (HDI)** (combining health, education and income), the **Measure of Economic Welfare (MEW)** and broader wellbeing measures.

The circular flow of income

- Households supply factors to firms and receive income; they spend it on goods and services from firms.
- **Leakages (withdrawals):** savings (S), taxes (T) and imports (M). **Injections:** investment (I), government spending (G) and exports (X).
- National income is in equilibrium when planned leakages equal planned injections: $S + T + M = I + G + X$.
- Higher injections than leakages cause national income to rise; higher leakages than injections cause it to fall.

Consumption, saving and the multiplier

- The **consumption function** shows how consumption varies with income: $C = a + bY$, where a is autonomous consumption and b is the marginal propensity to consume.

- **APC** = $C \div Y$. **MPC** = change in $C \div$ change in Y . Similarly for saving (APS, MPS). $MPC + MPS = 1$ in a closed economy without government.
- In an open economy with a government, the marginal propensity to withdraw (MPW) = $MPS + MPT + MPM$.

The multiplier: the process by which an initial change in an injection leads to a larger final change in national income.

Multiplier = $1 \div (1 - MPC)$ in a closed economy without government, or $1 \div MPW$ in general.

Worked example: $MPS = 0.1$, $MPT = 0.2$, $MPM = 0.2$, so $MPW = 0.5$ and the multiplier is $1 \div 0.5 = 2$. An increase in government spending of \$40 billion raises national income by $2 \times 40 = \$80$ billion.

- Limitations: the value of the multiplier is uncertain, takes time to work through, and is smaller in open economies with high taxes and high import spending. Near full employment, extra AD raises prices rather than output.

Investment and the accelerator

- Investment depends on interest rates (the cost of borrowing), business confidence (expectations), technology, retained profits, government policy and the rate of change of demand.
- **Accelerator principle:** the level of investment depends on the rate of change of national income (or output). A slowdown in growth, even without a fall in output, can reduce investment. This, together with the multiplier, helps explain the economic cycle.

Keynesian and classical (monetarist) views

- **Keynesian view:** the economy can settle at an equilibrium below full employment (a deflationary or negative output gap). Government should manage demand. AS is horizontal at low output.
- **Classical / monetarist view:** markets clear, the economy returns to full employment in the long run, LRAS is vertical, and increasing AD in the long run only raises prices. Policy should focus on the supply side and controlling the money supply.
- An **inflationary gap** (positive output gap) is where AD is greater than needed at full employment. A **deflationary gap** (negative output gap) is where AD is too low to give full employment.

Money and banking

- **Functions of money:** medium of exchange, unit of account, store of value, standard of deferred payment.
- **Characteristics:** acceptability, durability, portability, divisibility, scarcity (limited supply), homogeneity.
- **Money supply:** narrow money (notes, coins and bank deposits that can be withdrawn on demand) and broad money (narrow money plus other deposits, such as savings accounts).
- **Credit creation:** commercial banks keep only a fraction of deposits as liquid reserves and lend the rest, which is redeposited and lent again. Credit multiplier = $1 \div$ liquid assets ratio. A liquid

assets ratio of 10% gives a credit multiplier of 10.

- Banks balance liquidity, profitability and security when choosing their assets.
- The **central bank** issues currency, is banker to the government and to commercial banks, acts as lender of last resort, manages monetary policy and supervises the banking system.
- **Quantity theory of money:** $MV = PT$ (money supply $\times$ velocity of circulation = price level $\times$ number of transactions). If V and T are constant, an increase in M causes an equal proportionate rise in P . Criticisms: V and T are not constant, and causation may run from prices to money.
- **Demand for money (liquidity preference):** the transactions motive, precautionary motive and speculative motive. The speculative demand is inversely related to the interest rate.
- **Interest rate determination:** by the supply of and demand for money (liquidity preference theory) or by the supply of and demand for loanable funds (loanable funds theory).

Unemployment and the Phillips curve

- The **natural rate of unemployment** is the rate that exists when the labour market is in equilibrium (frictional and structural unemployment remain). The related idea of NAIRU is the rate at which inflation does not accelerate.
- **Short-run Phillips curve:** an inverse relationship between unemployment and inflation. Lower unemployment pushes up wages and prices.
- **Long-run Phillips curve (expectations-augmented):** vertical at the natural rate. If the government reduces unemployment below the natural rate, workers come to expect higher inflation, the short-run curve shifts up, and unemployment returns to the natural rate at a higher inflation rate.
- Evaluation: the relationship has broken down at times (stagflation), and expectations matter a lot.

Economic growth and sustainability

- The **economic cycle:** boom, downturn (slowdown), recession (often defined as two consecutive quarters of negative growth in real GDP), recovery.
- **Output gap:** the difference between actual and potential output. Trend growth is the long-run average rate of growth of potential output.
- **Sustainable growth** meets present needs without reducing the ability of future generations to meet theirs. Policies: environmental taxes, permits, investment in renewable energy, and regulation.
- Costs of growth: pollution, resource depletion, congestion, inequality. Benefits: higher incomes, better public services, reduced poverty.

Inflation and the exchange rate in more depth

- Monetarists see inflation as caused by excessive growth of the money supply. Keynesians emphasise demand-pull and cost-push causes, and the wage-price spiral.
- Inflation expectations can become self-fulfilling, which is why central banks publish targets and try to remain credible.

11. Government macroeconomic policy at A Level

- At A Level you must evaluate how effective fiscal, monetary and supply-side policies are in meeting each objective, and identify conflicts between them.
- **Fiscal policy** effectiveness depends on the size of the multiplier, the state of the economy (spare capacity or not), time lags, confidence, crowding out, and the level of government debt.
- **Monetary policy** effectiveness depends on how sensitive spending is to interest rates, the transmission mechanism through banks, confidence, the exchange rate effect, and whether rates are close to zero (a liquidity trap).
- **Supply-side policy** takes a long time to work and is expensive, but can achieve growth with low inflation.
- **Policy conflicts:** unemployment versus inflation (Phillips curve); growth versus the current account (imports rise with income); growth versus the environment; lower inflation through high interest rates versus growth and investment.
- **Government failure in macroeconomic policy:** poor data, time lags, political pressures before elections, inaccurate forecasts, and unexpected global shocks.
- Good essays recommend a **mix of policies**, matched to the cause of the problem: demand-side tools for cyclical problems, supply-side tools for structural problems.

12. International economic issues and development

Globalisation and trade policy

- **Globalisation:** the growing integration of the world's economies through trade, capital flows, migration, technology and multinational companies.
- **Benefits:** gains from specialisation and trade, economies of scale, technology transfer, foreign investment, lower prices and more choice. **Costs:** job losses in declining industries, exploitation risks, environmental harm, vulnerability to global shocks and a loss of national control.
- The **World Trade Organization (WTO)** promotes freer trade, settles trade disputes and sets trade rules.
- **Types of trading bloc** (in increasing order of integration): free trade area (no tariffs between members, each sets its own external tariffs); customs union (adds a common external tariff); common market (adds free movement of labour and capital); economic and monetary union (adds a single currency and a common monetary policy).
- **Trade creation:** joining a bloc switches buying from a higher-cost domestic producer to a lower-cost member country (a welfare gain). **Trade diversion:** buying switches from a low-cost non-member to a higher-cost member because of the common external tariff (a welfare loss).

The balance of payments and exchange rates in more depth

- The **Marshall-Lerner condition:** a depreciation will improve the current account balance only if the sum of the price elasticities of demand for exports and imports is greater than 1.
- The **J-curve effect:** after a depreciation, the current account may first get worse (because demand for exports and imports is inelastic in the short run, as contracts are fixed and habits take time to change), then improve as demand becomes more elastic.

- Effects of exchange rate changes on the macroeconomy: a depreciation raises AD (net exports rise) and can cause cost-push inflation through dearer imports. An appreciation does the opposite and puts pressure on exporters to cut costs.
- **Fixed versus floating exchange rates:** fixed rates give certainty for trade and investment and discipline against inflation, but need large reserves and take away the use of interest rates for domestic goals. Floating rates adjust automatically and free monetary policy, but are volatile and uncertain.
- Persistent current account deficits may lead to rising foreign debt, pressure on the currency and selling of domestic assets to foreigners. Persistent surpluses may mean low domestic consumption and can lead to tension with trading partners.

Economic development

Economic growth: an increase in real output (real GDP) over time.

Economic development: an improvement in living standards and wellbeing, including health, education, freedom and choice, not only income.

- Indicators: GDP per capita at PPP, the Human Development Index (life expectancy, education, GNI per capita), the Multidimensional Poverty Index, literacy rates, infant mortality, access to clean water, and the share of employment in agriculture.
- **Characteristics of many developing economies:** low income per head, large primary (agricultural) sector, high population growth, large informal sector, low savings and investment, limited infrastructure, high dependence on primary commodity exports, and often high levels of foreign debt.
- **Population:** birth rate, death rate, net migration and the **dependency ratio** (dependants compared with the working-age population). An ageing population raises pension and health costs; a young population needs spending on schools but can give a demographic dividend later. The optimum population is the size that gives the highest output per head with the available resources.
- **Barriers to development:** low savings (the savings gap), poor infrastructure, weak institutions and corruption, dependence on a few commodities with volatile prices, debt repayments, conflict, and limited human capital.
- **Sources of finance for development:** domestic savings, foreign direct investment (FDI), foreign aid, remittances from workers abroad, and trade.
- **Multinational companies (MNCs):** bring investment, jobs, technology and tax revenue, but may repatriate profits, use transfer pricing to avoid tax, exploit low wages and weak environmental rules, and crowd out local firms.
- **Foreign aid:** bilateral or multilateral; grants or loans; tied or untied. Benefits: fills savings gaps, funds health and education, emergency relief. Problems: dependency, corruption, tied aid serving the donor's interest, and debt if given as loans.
- **External debt:** high debt repayments divert spending from health and education. Debt relief and rescheduling can help but may create moral hazard.
- **Strategies:** import substitution (protect domestic industries to replace imports) versus export-led growth (open to trade, specialise in exports). Many economists favour export-led growth with

investment in human capital and infrastructure, but success depends on world demand and good institutions.

Key terms table

Term	Meaning
Opportunity cost	The value of the next best alternative forgone
Ceteris paribus	Other things being equal
Normative statement	A statement containing a value judgement, which cannot be tested
Public good	Non-excludable and non-rival
Merit good	Under-consumed in a free market because benefits are underestimated
PED	$\% \text{ change in quantity demanded} \div \% \text{ change in price}$
YED	$\% \text{ change in quantity demanded} \div \% \text{ change in income}$
XED	$\% \text{ change in quantity demanded of A} \div \% \text{ change in price of B}$
PES	$\% \text{ change in quantity supplied} \div \% \text{ change in price}$
Consumer surplus	Area below the demand curve and above the price
Incidence of tax	How the burden of a tax is shared between consumers and producers
Inflation	A sustained rise in the general price level
Terms of trade	$\text{Index of export prices} \div \text{index of import prices} \times 100$
Comparative advantage	Producing a good at a lower opportunity cost than another country
Progressive tax	The proportion of income paid in tax rises as income rises
Marginal utility	Extra satisfaction from one more unit consumed
Diminishing returns	Marginal product of a variable factor eventually falls when added to a fixed factor
Normal profit	The minimum profit needed to keep a firm in the industry ($AR = AC$)
Allocative efficiency	$P = MC$
Productive efficiency	Output at minimum average cost
Contestable market	No barriers to entry or exit and no sunk costs
Externality	A cost or benefit to a third party not reflected in price
Government failure	Intervention that makes resource allocation less efficient
Gini coefficient	Measure of inequality from 0 (equal) to 1 (unequal)
MRP	$\text{Marginal physical product} \times \text{marginal revenue}$
Monopsony	A single buyer, for example one dominant employer
Economic rent	Payment to a factor above its transfer earnings
Multiplier	$1 \div MPW$

Credit multiplier	$1 \div \text{liquid assets ratio}$
Marshall-Lerner condition	$PED_X + PED_M > 1$ (ignoring the minus signs) for a depreciation to improve the current account
Trade diversion	Switching imports from a low-cost non-member to a higher-cost bloc member
Dependency ratio	Dependants compared with the working-age population

Quick check

1. Define opportunity cost and explain how it is shown on a production possibility curve.
2. The price of a good rises from \$8 to \$10 and the quantity demanded falls from 1000 to 900 units. Calculate the price elasticity of demand and state what happens to total revenue.
3. Explain why a public good may not be provided by a free market.
4. A specific tax is placed on a good with price inelastic demand. Explain who bears most of the tax and why.
5. State two differences between demand-pull and cost-push inflation.
6. Distinguish between expenditure-switching and expenditure-reducing policies, giving one example of each.
7. State the equi-marginal principle and explain how it can be used to derive a downward-sloping demand curve.
8. Explain why a firm in perfect competition makes only normal profit in the long run.
9. State the conditions needed for price discrimination.
10. Explain why a free market overproduces a good that creates a negative production externality.
11. Explain how a minimum wage could raise both wages and employment in a monopsony labour market.
12. In an economy, $MPS = 0.15$, $MPT = 0.25$ and $MPM = 0.1$. Calculate the multiplier and the change in national income caused by a \$20 billion rise in investment.
13. Explain the J-curve effect after a depreciation of the currency.
14. Distinguish between trade creation and trade diversion.
15. Evaluate whether GDP per capita is a good measure of economic development.

1. Opportunity cost is the value of the next best alternative forgone when a choice is made. On a PPC, moving along the curve to produce more of one good means producing less of the other; the amount of the other good given up is the opportunity cost. A concave PPC shows increasing opportunity cost.

2. Percentage change in price = $(10 - 8) \div 8 \times 100 = 25\%$. Percentage change in quantity = $(900 - 1000) \div 1000 \times 100 = -10\%$. $PED = -10 \div 25 = -0.4$, so demand is price inelastic. Total revenue rises from $8 \times 1000 = \$8000$ to $10 \times 900 = \$9000$.

3. A public good is non-excludable, so people who do not pay cannot be stopped from benefiting. Consumers therefore have an incentive to free ride and not reveal their willingness to pay. Firms

cannot charge enough to make a profit, so the market may provide none of the good (the missing market).

4. Consumers bear most of it. When demand is price inelastic, quantity demanded falls only a little as price rises, so firms can pass most of the tax on as a higher price. The price rise is close to the full tax per unit, so the consumers' share of the tax revenue is larger than the producers' share.

5. Demand-pull inflation is caused by AD growing faster than output, while cost-push inflation is caused by rising costs of production. Demand-pull is shown by AD shifting right and usually comes with rising output and falling unemployment; cost-push is shown by SRAS shifting left and comes with falling output and rising unemployment (stagflation).

6. Expenditure-switching policies change the relative price of imports and domestic goods so that spending switches from imports to domestic output, for example a tariff or a devaluation. Expenditure-reducing policies cut total spending in the economy, which reduces imports, for example raising income tax or raising interest rates.

7. A consumer maximises utility when $MU_A/P_A = MU_B/P_B$ for all goods. If the price of A falls, MU_A/P_A rises, so the last dollar spent on A gives more utility than on B. The consumer buys more of A, and because of diminishing marginal utility MU_A falls until equality is restored. So a lower price leads to a higher quantity demanded, giving a downward-sloping demand curve.

8. If firms make supernormal profit in the short run, new firms are attracted because there are no barriers to entry and there is perfect information. Industry supply rises and the market price falls. This continues until price equals minimum average cost, where each firm makes only normal profit. Losses cause exit in the opposite way.

9. The firm must have some price-making (monopoly) power; it must be able to separate consumers into different markets (by age, time or location); the markets must have different price elasticities of demand; and it must be possible to prevent resale from the cheaper market to the dearer one. The cost of separating markets must not exceed the extra revenue.

10. Producers base output on their private costs only, so they produce where $MPC = MPB$. The external cost (for example pollution) means marginal social cost is higher than marginal private cost. The socially optimal output is where $MSC = MSB$, which is lower. The market therefore overproduces, and there is a welfare loss on the units between the optimum and the market output, where MSC is greater than MSB .

11. A monopsonist's marginal cost of labour is above the supply curve, so it employs fewer workers (where $MCL = MRP$) and pays a lower wage (read from the supply curve) than in a competitive market. A minimum wage set between this wage and the competitive wage makes the marginal cost of labour constant and equal to the minimum wage over a range of employment, because the firm no longer has to raise the wage to hire extra workers. The firm now employs where the minimum wage meets MRP or the supply curve, which can be more workers at a higher wage.

12. $MPW = 0.15 + 0.25 + 0.1 = 0.5$. Multiplier = $1 \div 0.5 = 2$. Change in national income = $2 \times \$20$ billion = \$40 billion increase.

13. After a depreciation, export prices fall in foreign currency and import prices rise in domestic currency. In the short run, demand for exports and imports is price inelastic because contracts are already agreed and buyers take time to find alternatives, so the value of imports rises more than

export revenue and the current account worsens. Over time demand becomes more elastic, export volumes rise and import volumes fall, so the current account improves. Plotted over time, the balance traces a J shape. The improvement depends on the Marshall-Lerner condition being met.

14. Trade creation happens when a country joins a trading bloc and switches from buying a higher-cost domestic product to a lower-cost product from a member country, which raises efficiency. Trade diversion happens when the common external tariff causes a country to switch from a lower-cost non-member supplier to a higher-cost member supplier, which reduces efficiency.

15. GDP per capita is useful because it is widely available, measures average income and is linked to the ability to buy goods and services. However, it is an average and ignores inequality; it misses the informal economy and non-marketed output; it ignores health, education, freedom and the environment; and it needs PPP adjustment for fair comparison. Composite measures such as the HDI or the Multidimensional Poverty Index give a fuller picture. Conclusion: GDP per capita is a useful starting point and a necessary part of development, but on its own it is not a good enough measure, so it should be used alongside other indicators.