

Choice, models and market adjustment

Pearson Edexcel · International A-Level · Economics

Pearson Edexcel International AS Economics (WEC11), specification Issue 2, June 2018. This topic covers spec sections 1.3.1–1.3.4 in full: introductory concepts (rows 1–6), consumer behaviour and demand (rows 1–3), supply (rows 1–2) and price determination (rows 1–4). One original market model runs through the worked examples so every number cross-checks: demand $Q_d = 140 - 2P$ and supply $Q_s = 20 + 4P$, with P in currency units per item and Q in items per day, giving equilibrium $P = 20$, $Q = 100$.

Must-know for this topic:

Family	Relationship
demand	$Q_d = 140 - 2P$; $PED = \frac{\% \Delta Q_d}{\% \Delta P}$; $TR = P \times Q$
elasticities	$YED = \frac{\% \Delta Q}{\% \Delta \text{income}}$; $XED = \frac{\% \Delta Q_a}{\% \Delta P_b}$; $PES = \frac{\% \Delta Q_s}{\% \Delta P}$
supply	$Q_s = 20 + 4P$; shift causes: costs, technology, taxes, subsidies, disasters
equilibrium	$Q_d = Q_s$; surplus areas $CS = \frac{1}{2} \times Q \times (P_{max} - P^*)$, $PS = \frac{1}{2} \times Q \times (P^* - P_{min})$

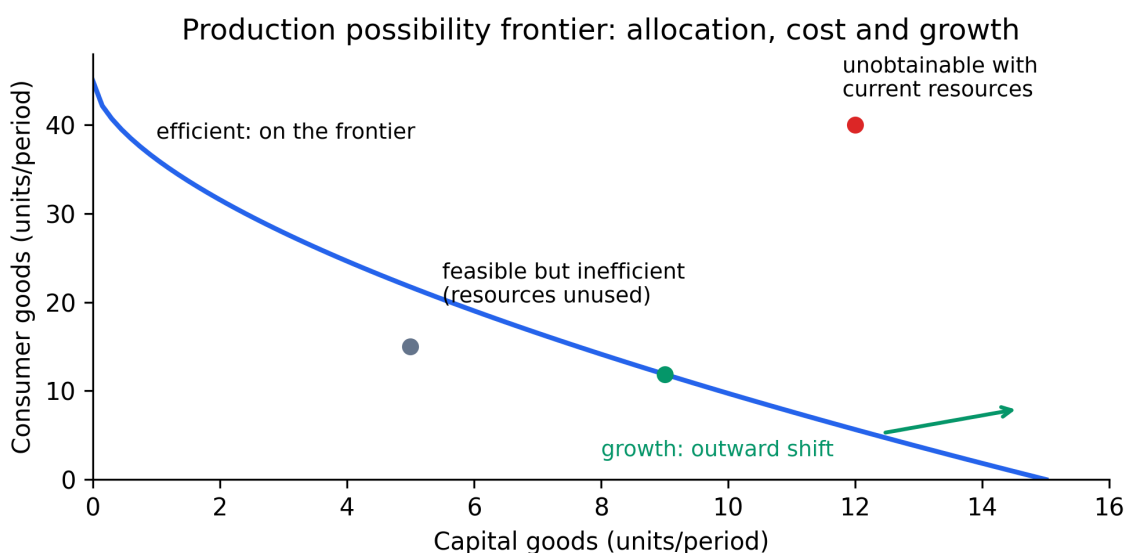
Introductory concepts

Economics is a **social science**: it cannot run controlled laboratory experiments on whole economies, so it builds MODELS based on stated assumptions and uses the **ceteris paribus** (all other things equal) assumption to isolate one relationship at a time (1.3.1.1). A **positive statement** can in principle be tested against evidence ("the tax raised £3bn"); a **normative statement** adds a value judgement ("the tax is too high") – and such value judgements influence economic decision making and policy (1.3.1.2).

Scarcity is unlimited wants against finite resources; resources are renewable or non-renewable; scarcity forces choice, and the real cost of any choice is its **opportunity cost** – the benefit of the next-best alternative forgone. A free good (air) needs no sacrifice; an economic good does (1.3.1.3). The **production possibility frontier** (PPF) depicts maximum productive potential: points ON the frontier are efficient, points inside are feasible but wasteful, points outside are unobtainable with current resources; its slope gives opportunity cost, which rises as the frontier bends because resources are not equally suited to all uses (marginal analysis: the cost of ONE more unit). Movements ALONG the frontier are reallocations; SHIFTS come from more or better resources or technology – capital goods (machines) versus consumer goods is itself a PPF choice, and producing more capital goods raises

productivity and future growth (1.3.1.4).

Specialisation and the division of labour (Adam Smith's pin factory) raise output per worker but can make work repetitive and skills narrow; specialisation requires exchange, and money makes exchange work – as a **medium of exchange**, a measure and store of value, and a method of deferred payment (1.3.1.5). Financial markets channel saving to businesses and individuals, facilitate the exchange of goods and services, provide forward markets in commodities and currencies, and provide a market for equities. Economies are organised along a spectrum: free market (price allocates), command (state allocates) and **mixed economy** (the state provides public goods, redistributes and regulates alongside markets) – free markets answer the what/how/for-whom questions without a planner but may produce inequality and market failure; command economies co-ordinate directly but misread preferences and weaken incentives (1.3.1.6).

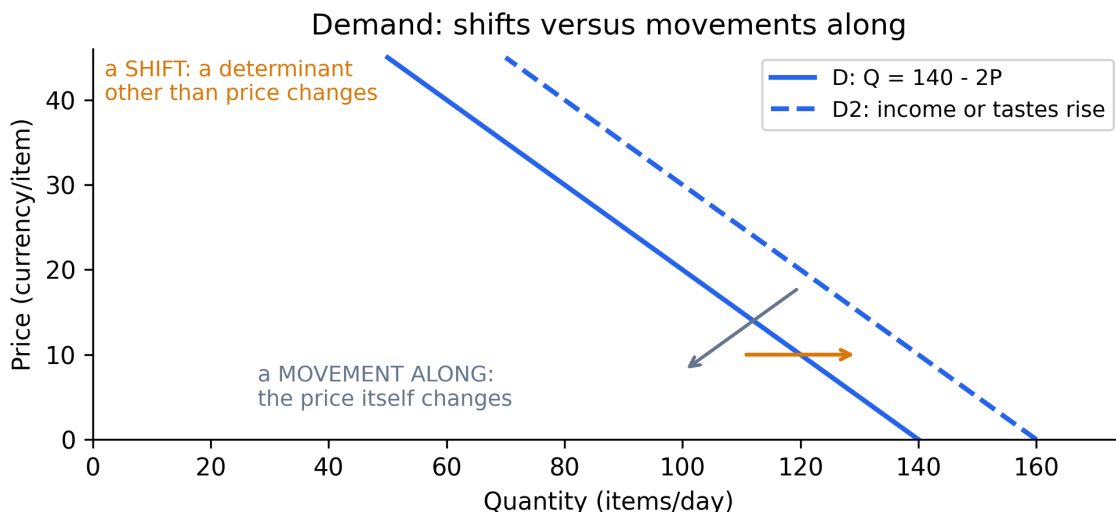


Original model; points, shift and labels are specified in the teaching text.

Consumer behaviour and demand

Rational decision making is an ASSUMPTION: consumers maximise **utility** and firms maximise profit (1.3.2.1a). Consumers may depart from this: herding (copying others), habitual behaviour, inertia, poor computational skills, the need to feel valued, and framing or bias (1.3.2.1b). Demand is the quantity buyers are willing AND able to purchase at each price over a period. A change in the good's own price is a movement **ALONG** the demand curve; a change in any other determinant **SHIFTS** it: prices of **substitutes** or **complements**, real income, tastes, the size and age distribution of the population, and advertising (1.3.2.2). Diminishing **marginal utility** – each extra item gives less additional satisfaction than the last – explains why the individual demand curve slopes **DOWNWARD**: you only buy another unit at a

lower price (**diminishing marginal utility**).



Original model on the shared demand curve; the determinant list is in the text.

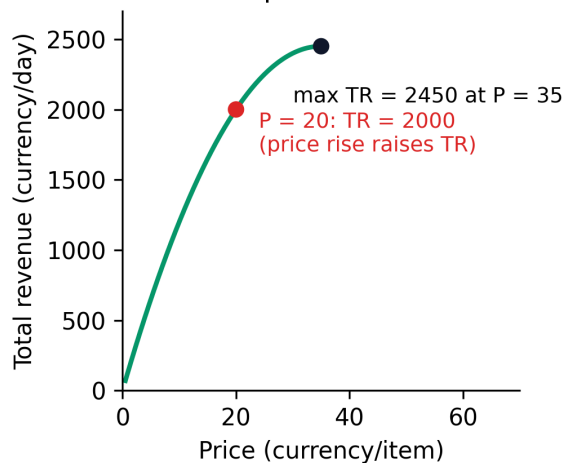
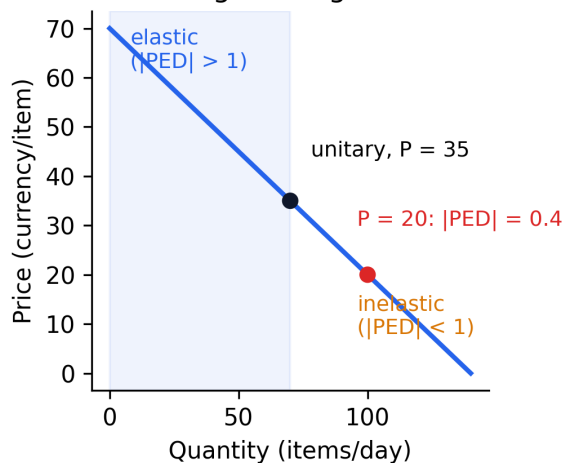
Elasticities of demand

Price elasticity of demand (PED) = $\frac{\% \Delta Q_d}{\% \Delta P}$. On the shared model at $P = 20$: raising price to 22 changes Q_d from 100 to 96, so $\% \Delta Q = -4\%$, $\% \Delta P = +10\%$ and $PED = -0.4$ – price inelastic (1.3.2.3b–c). The five cases: perfectly elastic (horizontal), elastic ($|PED| > 1$), unitary ($|PED| = 1$), inelastic ($|PED| < 1$), perfectly inelastic (vertical). PED depends on substitutes available, branding, the share of the budget spent on the good, addictiveness and durability (1.3.2.3d). **Total revenue** $TR = P \times Q$: at $P = 20$, $TR = 2000$; at $P = 22$, $TR = 22 \times 96 = 2112$ – when demand is inelastic, a price rise RAISES revenue (1.3.2.3e,g). Along a straight-line demand curve PED is NOT constant: elastic at high prices, unitary at the midpoint, inelastic at low prices, so TR is maximised exactly where $|PED| = 1$ – here at $P = 35$, $Q = 70$, $TR = 2450$ (1.3.2.3f).

Income elasticity of demand (YED) = $\frac{\% \Delta Q}{\% \Delta \text{income}}$: income up 10% raising quantity 8% gives $YED = +0.8$ – a NORMAL good, income inelastic; $YED > 1$ is income elastic, $YED < 0$ an INFERIOR good (1.3.2.3h). **Cross elasticity of demand** (XED) = $\frac{\% \Delta Q_a}{\% \Delta P_b}$: $XED > 0$ means substitutes, $XED < 0$ complements, $XED \approx 0$ unrelated – good X up 10% raising quantity of Y 10% gives $XED = +1.0$, close substitutes (1.3.2.3i). Firms use PED for pricing and revenue planning, YED for forecasting over the business cycle, XED for pricing rival and bundled goods; government uses PED to predict tax revenue and the burden of indirect taxes (1.3.2.3j).

PED varies along a straight demand curve

Total revenue peaks where $PED = -1$



Both panels are computed from the shared demand curve; the marked points are $P = 20$ and $P = 35$.

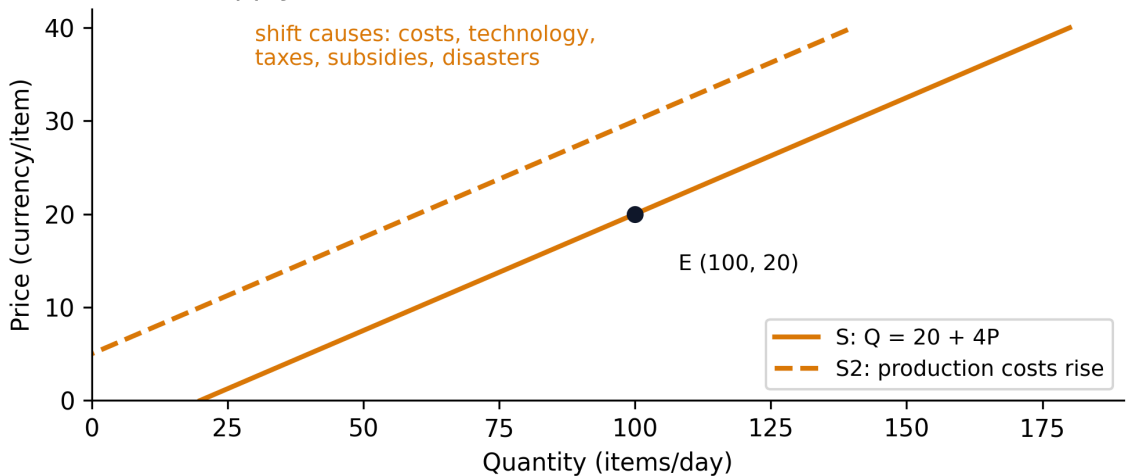
Supply

Supply is the quantity sellers are willing AND able to offer at each price over a period; a change in the good's own price is a movement **ALONG** the supply curve, and a shift comes from production costs, new technology, indirect taxes (specific = so much per unit; ad valorem = a percentage of price), subsidies, or natural disasters (1.3.3.1).

Price elasticity of supply

$(PES) = \frac{\% \Delta Q_s}{\% \Delta P}$: on the shared supply curve at $P = 20$, a rise to 24 moves Q_s from 100 to 116, so $PES = \frac{16\%}{20\%} = +0.8$ – inelastic supply (1.3.3.2a–b). PES depends on the time period (supply is more elastic in the long run), availability of stock and perishability, mobility of factors of production, legal constraints, and spare capacity (1.3.3.2c). The **SHORT RUN** has at least one fixed factor; the **LONG RUN** has all factors variable, which is why supply response, and therefore PES, grows with time (1.3.3.2d).

Supply shifts; at E, $PES = 4 \times (20/100) = +0.8$ (inelastic)



Original model on the shared supply curve; the shift list matches the spec row.

Price determination, surplus and the price mechanism

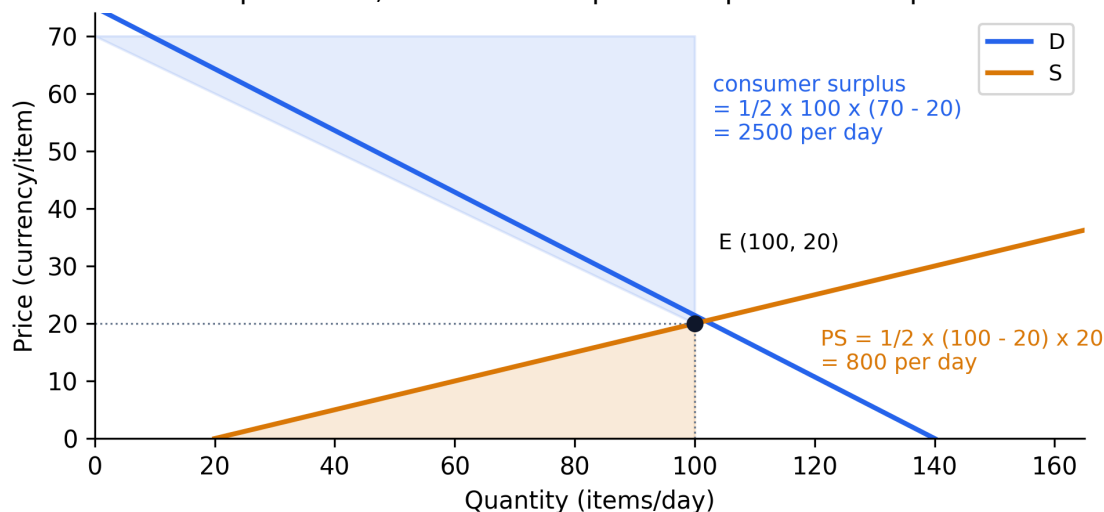
Equilibrium is where $Q_d = Q_s$: $140 - 2P = 20 + 4P$ gives $120 = 6P$, so $P^* = 20$ currency units and $Q^* = 100$ items/day (1.3.4.1a). At $P = 15$, $Q_d = 110$ and $Q_s = 80$: **excess demand** of 30 items/day puts upward pressure on price; at $P = 25$, $Q_s = 120 > Q_d = 90$ (excess supply of 30) pushes price down, and market forces eliminate both disequilibria as quantities move along unchanged curves (1.3.4.1c). A shift in demand or supply changes equilibrium price AND quantity in predictable directions: demand right raises both; supply right lowers price and raises quantity; when BOTH shift, one variable's direction depends on relative shifts, so demand right with supply left certainly raises price, but quantity depends on which shift dominates (1.3.4.1b).

Consumer surplus is the gap between what buyers would pay (the demand curve) and what they pay: $CS = \frac{1}{2} \times 100 \times (70 - 20) = 2500$ currency units/day, where 70 is the vertical intercept of the demand curve. **Producer surplus**

is the gap between the price received and the minimum acceptable supply price: the supply curve reaches price zero at $Q = 20$, so $PS = \frac{1}{2} \times (100 - 20) \times (20 - 0) = 800$ per day (1.3.4.2a). A demand rise increases both surpluses at the new equilibrium; a supply fall reduces consumer surplus and its price effect raises – then limits – producer surplus (1.3.4.2b).

The **price mechanism** allocates scarce resources through three functions: RATIONING (a higher price rations a scarcer good), INCENTIVE (a higher price rewards producers of the scarce good) and SIGNALLING (the price change carries information about where resources are valued); the same mechanism works in local, national and global markets (1.3.4.3).

Equilibrium, consumer surplus and producer surplus

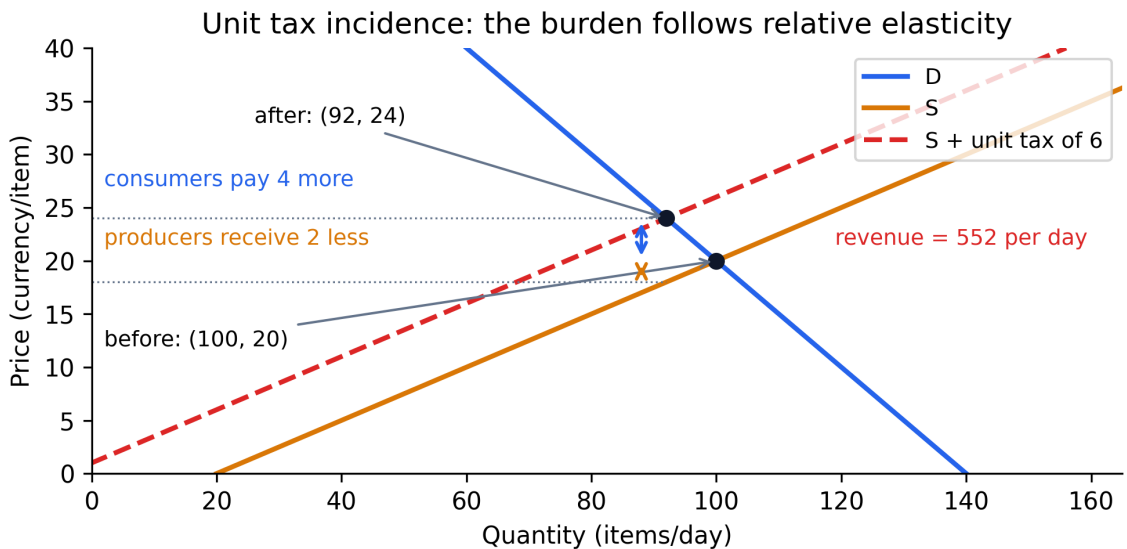


Original model; the shaded areas are computed in the text.

Indirect taxes and subsidies

An **indirect tax** raises costs: a specific tax is a fixed amount per unit and shifts supply up vertically by the tax. On the shared model, a unit tax of 6 gives a new supply (in consumer prices) $Q_s = 20 + 4(P - 6) = 4P - 4$; setting $140 - 2P = 4P - 4$ gives $P_c = 24$ and $Q = 92$; producers keep $24 - 6 = 18$. Consumers pay 4 more ($24 - 20$), producers receive 2 less ($20 - 18$), so the 6-unit tax splits 4:2 (1.3.4.4a–b). Government revenue is $6 \times 92 = 552$ currency units/day. **Tax incidence** follows relative elasticity: here PED at the original equilibrium is -0.4 (demand is relatively inelastic) and PES is $+0.8$, so consumers bear the larger share; if demand were more elastic than supply, producers would bear more. Demand falls, so output and employment in the market fall, and the price rise contributes to inflation.

A **subsidy** of 6 per unit shifts supply DOWN: $Q_s = 20 + 4(P + 6) = 4P + 44$; $140 - 2P = 4P + 44$ gives $P_c = 16$, $Q = 108$, producers receive $16 + 6 = 22$. Consumers gain 4 ($20 - 16$), producers gain 2 ($22 - 20$), output rises to 108, and the government (taxpayer) pays $6 \times 108 = 648$ currency units/day (1.3.4.4c–d). The same incidence logic applies: the more inelastic side of the market gains less from a subsidy.



Original model; the tax, the price split and the revenue figure are computed in the text.

Checklist

- Economics as a social science; models and *ceteris paribus* (1.3.1.1). Positive vs normative statements and value judgements in policy (1.3.1.2).
- Scarcity, renewable vs non-renewable resources, opportunity cost, free vs economic goods (1.3.1.3).
- PPF: potential, efficiency, unobtainable points, marginal opportunity cost, growth and decline, movements vs shifts, capital vs consumer goods and productivity (1.3.1.4).
- Specialisation and division of labour; money's four functions; the five roles of financial markets (1.3.1.5).
- Free market, command and mixed economies; advantages, disadvantages, the state's role (1.3.1.6).
- Rationality assumption and its six limits; demand, movements vs shifts and their five determinants; diminishing marginal utility and the downward slope (1.3.2.1–2).
- PED, YED, XED: formulae, the five PED cases, PED's five determinants, TR and the TR-maximising price, normal vs inferior goods, substitutes vs complements, significance for firms, consumers and government (1.3.2.3).
- Supply, movements vs shifts with the five shift causes incl. specific and ad valorem taxes; PES with its five influences, short run vs long run (1.3.3).
- Equilibrium from $Q_d = Q_s$; excess demand and supply eliminated; double-shift indeterminacy; consumer and producer surplus areas; rationing, incentive and signalling across market types (1.3.4.1–3).

- Indirect taxes and subsidies: prices, quantities, revenue/cost, and incidence by relative elasticity (1.3.4.4).

Boundary notes: quantitative skills QS1–QS4 are exercised throughout (percentages, index numbers, fractions) and calculators are allowed in WEC11/WEC12. Answers must define the elasticity sign convention (Edexcel accepts PED reported as negative or as absolute value – state which). All worked numbers are original and internally consistent with the model $Q_d = 140 - 2P$, $Q_s = 20 + 4P$.