

Government microeconomic intervention (A Level)

A-Level Economics

This topic looks at how governments correct **market failure**, make incomes fairer, and act in the labour market.

Correcting market failure

Start with the cause of market failure and the outcome being targeted. Reducing a quantity, raising revenue and improving resource allocation are different aims. This unit builds on the private/social cost and benefit diagrams in the earlier A-Level microeconomics topic; a policy answer must use those diagrams, not just name a tool.

■ Congestion: identify harm to other people

A driver considers their own journey benefit and private costs. An extra trip can also delay other road users. That extra delay is an external harm; it is different from the driver's own time cost. In a negative consumption-externality diagram, marginal social benefit is below marginal private benefit. Alternatively the extra harm can be represented on the cost side, but do not subtract it from benefits and add it to costs in the same calculation.

Worked illustrative model. Quantity Q is journeys per period; all marginal benefits and costs are in pounds per journey. Marginal private benefit is $MPB = 100 - Q$. Marginal private cost is $MPC = 20 + Q$. External harm is £20 per journey. In the benefit-side diagram, $MSB = 80 - Q$ and $MSC = MPC$. These are constructed values, not estimates of a real city's optimal charge. The private outcome ignores harm to others:

$$MPB = MPC \quad \Rightarrow \quad 100 - Q = 20 + Q$$

$$Q_m = (100 - 20)/2 = 40 \text{ journeys per period}$$

$$C_m = 20 + Q_m = 20 + 40 = \text{£}60 \text{ per journey}$$

The efficient quantity balances marginal social benefit and cost:

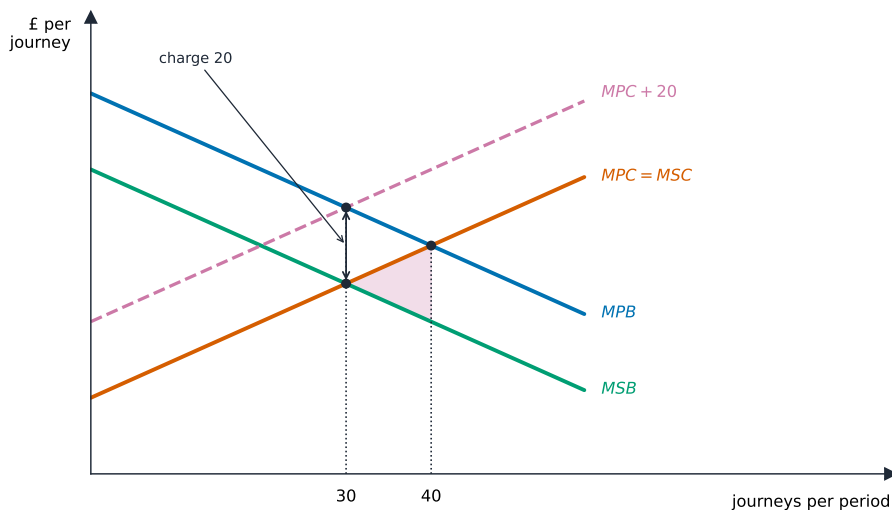
$$MSB = MSC \quad \Rightarrow \quad 80 - Q = 20 + Q$$

$$Q^* = (80 - 20)/2 = 30 \text{ journeys per period}$$

$$C^* = 20 + Q^* = 20 + 30 = \text{£}50 \text{ per journey}$$

For journeys between 30 and 40, marginal social cost exceeds marginal social benefit. Removing these trips avoids a triangular deadweight loss:

$$DWL = \frac{1}{2}(Q_m - Q^*) MEC = \frac{1}{2}(40 - 30)(20) = \text{£}100 \text{ per period}$$



Private choice: 40; efficient quantity: 30
Harm is counted once: $MSB = MPB - 20$

Private choice gives 40 journeys. Including the external harm gives 30. A 20-pound charge raises private marginal journey cost and reaches 30 in this model; the charge is a transfer, not an extra 20 pounds of real resource cost per journey.

■ A charge: follow incentives, output and revenue

An **indirect tax** or road-use charge raises the private marginal cost faced by the traveller. In this model a specific £20 charge gives:

$$MPB = MPC + t \quad \Rightarrow \quad 100 - Q = 20 + Q + 20$$

$$Q_t = (100 - 40)/2 = 30 \text{ journeys per period}$$

$$C_{\text{faced}} = MPC(Q_t) + t = 20 + 30 + 20 = \text{£}70 \text{ per journey}$$

$$R = tQ_t = 20(30) = \text{£}600 \text{ per period}$$

The £70 is the traveller's marginal private journey cost including the charge; £50 is private cost excluding it. Costs may include time as well as money, so do not describe these numbers as a fare and a transport company's cash receipts. Tax revenue must

not be counted as an additional social loss: it is transferred to government. External harm from the remaining 30 journeys is still £600; efficient output does not mean zero harm. The aim is to remove trips whose social cost exceeds their social benefit, not necessarily to ban all travel.

The corrective charge equals marginal external harm at the efficient quantity under this model's assumptions. With varying harm, different times, incomplete coverage, market power or uncertain behaviour, a uniform charge need not be exactly efficient. Diversion to another road may move harm rather than remove it. Assess monitoring, collection costs, distributional effects, availability of alternatives and how revenue is used.

A specific tax is a fixed amount per unit. An **ad valorem tax** is a proportion of a taxable price: at a 20% rate the tax on a £50 taxable price is £10, while on £80 it is £16. Neither the rate nor revenue alone establishes that the tax matches external harm.

■ Subsidising an alternative is a different mechanism

A **subsidy** can make public transport cheaper or support additional capacity. It reduces road congestion only to the extent that it changes relevant travel choices; not every additional passenger was previously a car user.

Separate transport-market example. Bus demand is $P = 50 - Q$ and original supply is $P = 10 + Q$, with pounds per trip and trips per period. Before subsidy, $Q = 20/P = 30$. A per-trip producer subsidy £10 gives buyer-facing supply $P = Q$:

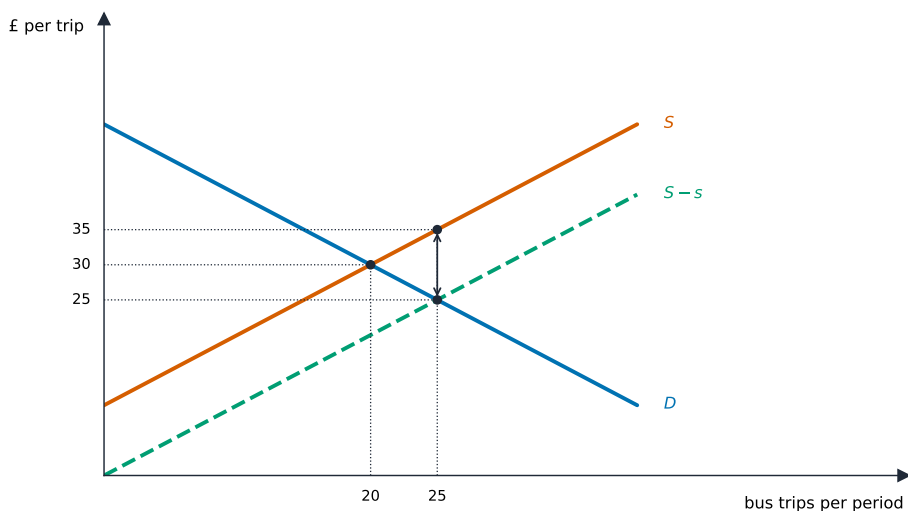
$$P_D = P_S - s \quad \Rightarrow \quad 50 - Q = 10 + Q - 10$$

$$Q_1 = 50/2 = 25 \text{ bus trips per period}$$

$$P_b = 50 - Q_1 = 50 - 25 = £25 \text{ per trip}$$

$$P_s = P_b + s = 25 + 10 = £35 \text{ per trip}$$

$$G = sQ_1 = 10(25) = £250 \text{ per period}$$



Subsidy £10 per trip: passenger pays £25; producer receives £35
Government spending: $10 \times 25 = £250$ per period

In this separate market, passengers pay 25, producers receive 35 and quantity rises 20→25; the fiscal cost is 250 per period.

The five extra bus trips do not establish five fewer car trips. Some passengers may switch from walking, and the routes or times may not serve congested journeys. Compare a road charge with this subsidy using price responses, substitution, service quality and fiscal opportunity cost. A subsidy also does not create new buses or staff immediately when capacity is fixed.

■ Price controls: distinguish affordability from allocation

A **price control** sets a legal ceiling or floor. In a separate competitive market, demand is $Q_d = 30 - P$ and supply $Q_s = P$. Original equilibrium is $P\ 15/Q\ 15$. A ceiling 12 gives demand 18 but supply 12: a shortage 6, with only 12 units supplied legally without another source. A lower posted price does not establish better availability or efficient allocation. In a market with power or a different supply structure, first identify the relevant model; do not assume every ceiling has the same effects. Minimum wages below provide a further price-floor application.

■ Quantity rules, permits and property rights

Regulation can impose standards or restrictions. A **production quota** limits a stated quantity; a **prohibition** bans a stated activity; a **licence** sets conditions for legal participation. A cap can make the allowed quantity clear, but enforcement, exemptions and illegal activity determine the actual outcome. Different rules work through different channels; not all regulation is simply a quantity limit.

Tradable permits combine an overall emissions cap with trade in permission to emit. Suppose two firms would otherwise emit two units each. A cap

of two units requires two reductions overall. Each of A's two possible reductions costs £10; each of B's costs £30. Making each cut one costs £40. Allowing A to cut two and B none costs £20 and meets the same cap. A permit trade can reward these cheaper reductions. This least-cost argument assumes the emissions are comparable, trades are feasible and compliance is monitored; local hotspots, market power or poor enforcement can change the result. A permit price is a transfer between traders, not another resource cost of abatement.

Clear property rights may let affected parties negotiate. If reducing a factory's noise costs £80 and benefits a neighbouring household by £120, there is a possible gain of £40 to share through agreement. Bargaining can be difficult when thousands of people are affected, harm is hard to measure, rights are unclear or enforcing agreement is costly. This is a conditional alternative to a direct tax or ban, not proof that all externalities solve themselves.

■ Information, nudges, provision and ownership

State provision means government supplies or arranges a service; it need not be free. Extra buses or safer cycling routes may address an actual missing alternative. **Information** about routes or travel times may help where people lack knowledge, but cannot by itself supply a bus that does not exist. A **nudge** changes how a choice is presented while leaving options available, such as making a public-transport route the default suggestion. Its effect depends on the cause of behaviour and whether travellers can use the suggested option.

Nationalisation transfers ownership into the public sector; **privatisation** transfers it to private owners. Neither change alone removes monopoly power, creates a third-party price or ensures adequate capacity. Compare objectives, incentives, regulation, investment and accountability before predicting the outcome.

■ Competition policy and government failure

Competition policy addresses practices or structures that weaken effective competition. A firm with **monopoly power** may restrict output and raise price. Preventing price-fixing, reviewing mergers or reducing entry barriers can help, but a large size alone does not establish harmful behaviour. Merger cost savings must be compared with effects on rivalry and customers; regulation of a natural monopoly must consider costs, quality and investment.

Government failure means intervention produces worse resource allocation than the relevant alternative. A policy being costly, imperfect or unpopular is not enough to establish failure. Compare benefits with administration, compliance and opportunity costs. Poor estimates of harm, weak enforcement, time lags, unintended diversion or decisions serving a narrow group can reduce the gain.

Deregulation removes or relaxes a restriction. Suppose an exclusive route licence blocks other bus operators. Allowing entry may increase choice and rivalry, but entry is not guaranteed if depot access or scale remain barriers. Retaining safety

standards and managing scarce road space may still be needed. Removing a rule does not by itself remove congestion or establish a welfare gain. Compare benefits from entry with service quality, coverage and external costs.

Build a two-policy judgement. For congestion, explain the external harm and inefficient quantity with a labelled diagram. Show how a charge changes private incentives; compare it with an alternative-transport subsidy or direct provision. Evaluate responsiveness, routes and capacity, time, costs and who is affected. A justified combination may work better than either policy alone, but must be assessed against feasible alternatives. In a climate-change question also consider cross-border effects, coordination, bargaining or private action; do not conclude that all government intervention succeeds or that government is the only possible source of improvement.



Cigarettes can involve underestimated harm to the smoker and harm to others. These are different mechanisms; a policy should address the relevant one.

Equity and redistribution

Equity means fairness; **equality** means equal amounts, treatment or opportunities, depending on the comparison. People may disagree about what is fair. Two households each receive £100: equal cash amounts, but not necessarily equal opportunities if one needs costly disability support. Allocative efficiency concerns whether resources produce the greatest net social benefit. An efficient allocation can still be judged unfair. Better access to education may improve both fairness and efficiency; neither a conflict nor a joint gain is automatic.

a fair outcome is not always an equal one

equality
everyone gets the *same* share

equity
everyone gets a *fair* share
(not always the same)

Equal amounts and fair treatment are different judgements.

Inequality describes differences in a distribution. **Income** is a flow over a period. **Wealth** is a stock of assets less relevant debts at a date. A person earning £2000 per month with a £150000 home and £100000 mortgage has £50000 net housing wealth, before other assets and debts. Monthly income and this stock cannot be added as if they had the same units.



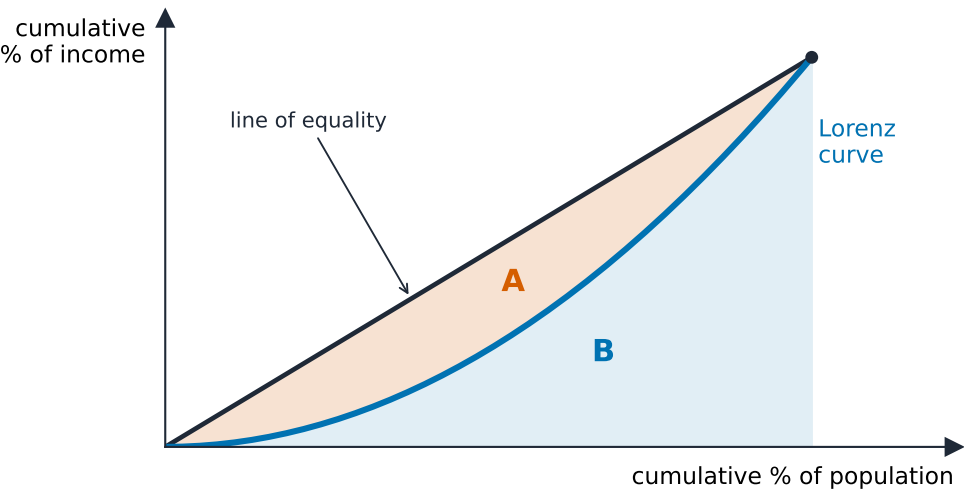
A photograph may suggest differences in living conditions; it does not measure an income Gini or prove their cause.

■ Measuring inequality

A **Lorenz curve** plots cumulative income share vertically against cumulative population share horizontally, ordering people from poorest to richest. Both axes run from 0 to 100%. The diagonal represents equal shares. Let A be the area between the diagonal and the curve, and B the area below the curve. The **Gini coefficient** is:

$$G = \frac{A}{A + B}$$

Zero represents perfect equality; values nearer one indicate greater measured inequality. Use the same population, income definition and period when comparing. Income and wealth Ginis describe different distributions. A Gini does not establish absolute living standards, the cause of a change or the position of every group.



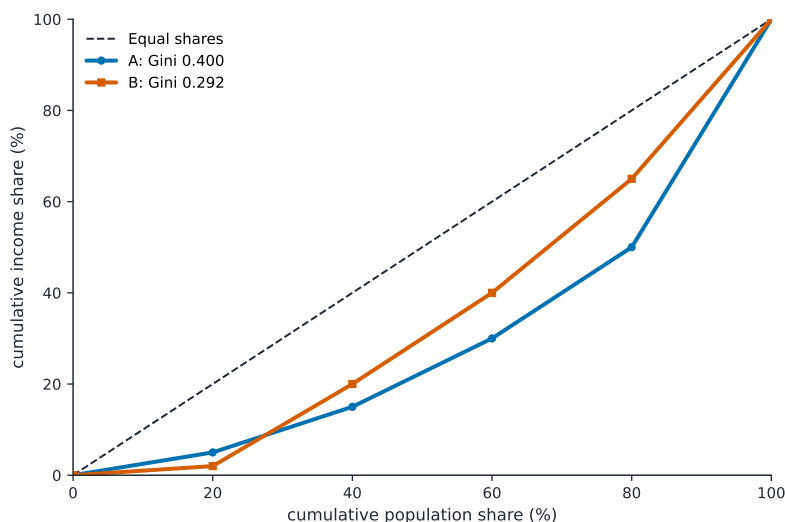
$$\text{Gini} = A/(A + B) \cdot 0 = \text{equal}, 1 = \text{most unequal}$$

The area ratio summarises the whole distribution. It does not identify every household’s income.

Worked data comparison. Each row below is one fifth of the population, ordered by income within that economy. Entries are shares of total income, not pounds.

Fifth, poorest first	A share %	B share %
1	5	2
2	10	18
3	15	20
4	20	25
5	50	35

Add the shares: A’s cumulative percentages are 0, 5, 15, 30, 50, 100; B’s are 0, 2, 20, 40, 65, 100. Their Lorenz curves cross. For straight segments between these grouped points, the illustrative Ginis are 0.400 and 0.292. B has a lower overall Gini but its poorest fifth receives a smaller share, 2% rather than 5%. A lower Gini alone cannot prove that one Lorenz curve lies everywhere above another. Nor do these percentages establish which poorest group has more pounds without total income and population information.



Poorest fifth: A gets 5%; B gets 2%
Grouped shares, with straight segments between points

The ranking of the two poorest cumulative groups changes: a Gini ranking does not establish pointwise dominance.

■ Poverty and the poverty trap

Absolute poverty means resources fall below a specified basic-needs standard. **Relative poverty** means resources fall below a specified standard relative to society, often a fraction of median income. State the measure and household adjustment. A relative threshold may rise as median income rises. A Gini can fall while some people remain unable to afford basic needs.

A **poverty trap** can arise when extra earnings bring higher taxes and withdrawal of benefits, leaving little extra disposable income and weakening the financial return to work. It is not simply another name for low income.

Worked example, pounds per week. Earnings rise from 100 to 150; tax rises from 0 to 20; benefits fall from 80 to 55.

$$Y_d = Y - T + B$$

$$Y_{d0} = 100 - 0 + 80 = \text{£}180 \text{ per week}$$

$$Y_{d1} = 150 - 20 + 55 = \text{£}185 \text{ per week}$$

Of £50 extra earnings, only £5 remains. The combined effective marginal withdrawal rate is:

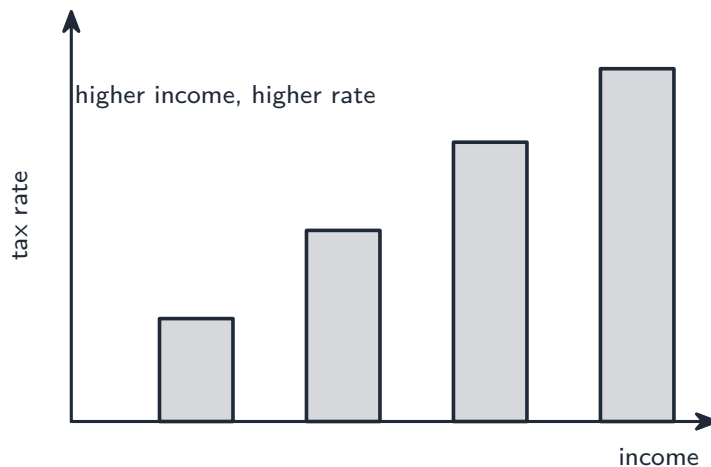
$$m = \frac{\Delta T - \Delta B}{\Delta Y} = \frac{20 - (-25)}{50} = 0.90 = 90\%$$

Travel or childcare costs may further change the gain. The calculation identifies a financial incentive, not a guarantee about an individual's decision. Education, health and care responsibilities also matter.

■ Policies to redistribute

A **progressive tax** takes a larger average share of higher incomes. **Benefits** paid without a current production exchange are **transfer payments**

. Taxes, transfers and services can change disposable income and opportunity; this is **redistribution**. They may also change work, saving and investment incentives. Wealth policies require attention to valuation, liquidity, enforcement and avoidance; income taxes have their own enforcement problems. Which is easier to administer depends on the actual tax base and institutions.



A progressive schedule concerns rates, not merely a larger cash bill.

A **negative income tax** pays a net transfer below a break-even income and collects net tax above it. In an illustrative weekly rule, net tax $T = 0.5Y - 80$. Negative T means a payment to the household, not a debt it owes.

Earnings Y	Net tax T	Disposable $Y - T$
0	-80	80
100	-30	130
160	0	160
200	20	180

For example, $T = 0.5(100) - 80 = -£30$ and $Y_d = 100 - (-30) = £130$ per week. Each extra pound of earnings adds 50p to disposable income in this rule before other taxes,

transfers or costs. Assess adequacy, finance, take-up and administration; a smooth withdrawal does not eliminate every barrier to employment.

Universal benefits go to everyone within a defined eligible category, such as all eligible children. **Means-tested benefits** depend on income or assets. A **universal basic income** is a regular unconditional payment to every individual in the defined population. A child benefit is not automatically a UBI.

Comparison task. A category contains 100 households; 40 meet a low-income test. A payment of £80 per household costs £8000 if universal within the category or £3200 if limited to the 40, before administration and tax recovery. The smaller gross payment bill does not prove greater net benefit: check exclusions, take-up, withdrawal incentives and administrative costs. Universal payments may reach households with high incomes but the tax system can recover some cost. Accessible education and health services may improve opportunity, yet places, quality and financing constrain the result. Defend a policy against a feasible alternative, addressing both distribution and efficiency.

Labour markets

In a **labour market** workers offer labour and employers hire it. State the occupation, location and period. A **wage** is a payment rate, not the number of workers. Distinguish the whole occupation's market from one small employer taking its wage as given.



Product demand, equipment and skills affect hiring; a photograph alone cannot establish an employer's market power.

■ The demand for labour

The **demand for labour** is a **derived demand** : demand for the product affects demand for the workers who make it. The **marginal revenue product**, MRP, is the extra revenue from an extra worker-hour:

$$MRP = MPP \times MR$$

MPP is marginal physical product; MR is the extra revenue per unit of output. If the firm sells output at a constant competitive price P, $MR = P$ and the shortcut $MRP = MPP \times P$ applies. An extra worker producing 3 units per hour sold at a constant £6 per unit brings £18 extra revenue per hour. If relevant marginal revenue is £4 instead, MRP is £12, not £18. Hiring compares MRP with marginal employment cost; only a wage-taking employer with no extra employment costs can use the wage directly.

Whole-worker decision. Extra hourly revenues from workers 1–5 are £28, £24, £18, £12 and £8. With a fixed hourly wage of £14 and no other changing costs, hire three: worker 3 adds £4 net revenue, worker 4 subtracts £2. Exact $MRP = \text{wage}$ equality need not occur with whole workers. In a smooth divisible-labour model, an interior maximum uses $MRP = \text{marginal employment cost}$.

■ Market and firm supply are different

The **supply of labour** to an occupation depends on wages, training, population, migration, mobility, working conditions and alternatives. A wage change gives a movement along the given curve; training or migration can shift it. An individual worker's hours need not rise at every wage: income and substitution effects can pull in different directions. The upward market curve below is an explicit model assumption.

Market illustration. In pounds per hour and worker-hours per period, demand is $w = 30 - L$ and supply $w = 6 + 0.5L$. At equilibrium:

$$D = S \quad \Rightarrow \quad 30 - L = 6 + 0.5L$$

$$L^* = \frac{30 - 6}{1.5} = 16 \text{ worker-hours per period}$$

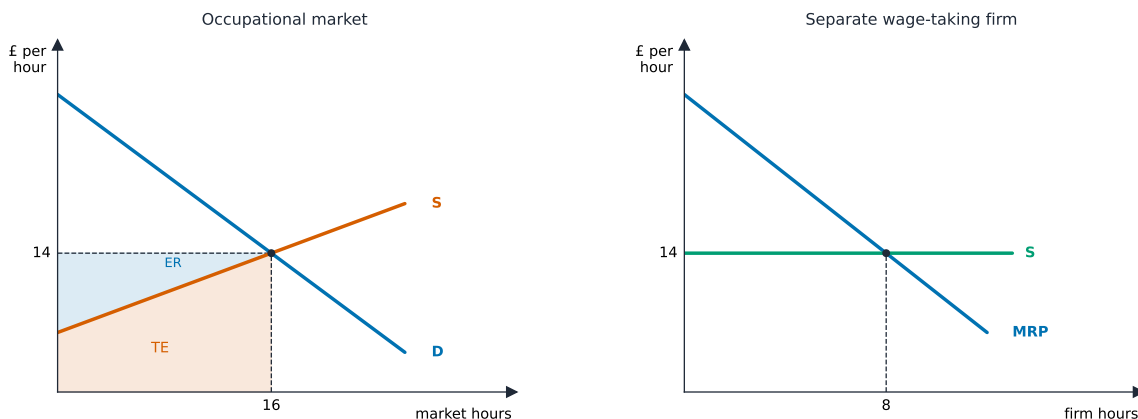
$$w^* = 6 + 0.5L^* = 6 + 0.5(16) = £14 \text{ per hour}$$

Separate small-firm illustration. One wage-taking firm has $MRP = 30 - 2l$ and can hire at £14 per hour without changing that market wage. Its supply curve is horizontal at 14 even though market supply slopes upward.

$$MRP = w \quad \Rightarrow \quad 30 - 2l = 14$$

$$l^* = \frac{30 - 14}{2} = 8 \text{ firm worker-hours per period}$$

These are separate illustrations, not an exact aggregation of identical firms. A productivity increase at this firm alone shifts its MRP to $34 - 2l$, giving $l = (34 - 14)/2 = 10$ with wage still 14. A separate market-wide demand shift to $w = 36 - L$, holding market supply fixed, gives $L = (36 - 6)/1.5 = 20$ and wage $6 + 0.5(20) = 16$. A perfectly elastic supply to a firm does not mean the market wage can never change.



Quantities are worker-hours per period; wage is £ per hour
Market shaded areas: transfer earnings (TE), economic rent (ER)

Market supply determines the wage with market demand; the small firm faces that wage and chooses its own hiring.

Labour-saving machinery can substitute for labour but lower costs and expand output. Evaluate the net demand change rather than treating any new machine as a certain fall in employment. Better working conditions or easier qualification may attract workers at a given wage; increased product demand shifts MRP, while a change in wage alone moves along the given demand curve.

■ When the market is not competitive

A monopsony employer faces upward-sloping labour supply. In a uniform-wage model, hiring more workers requires raising the wage for existing workers too, so marginal employment cost ME exceeds the wage. Use a separate local-market example with $MRP = 30 - L$ and wage supply $w = 6 + 0.5L$. Total wage cost is $TC_L = wL = 6L + 0.5L^2$, so $ME = 6 + L$.

$$MRP = ME \Rightarrow 30 - L = 6 + L$$

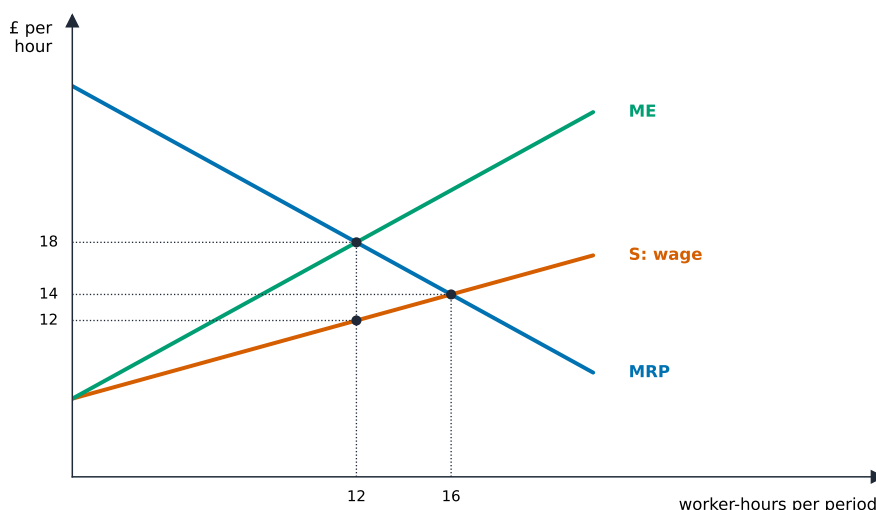
$$L_m = \frac{30 - 6}{2} = 12 \text{ worker-hours per period}$$

$$w_m = 6 + 0.5L_m = 6 + 0.5(12) = \text{£}12 \text{ per hour}$$

$$ME_m = 6 + L_m = 6 + 12 = \text{£}18 \text{ per extra worker-hour}$$

Choose quantity using $MRP = ME$, then read wage from supply. Paying 18 to everyone would be the wrong wage. Holding the same MRP and supply curves fixed, the

competitive benchmark is $L = 16$ and $w = 14$. This comparison depends on the uniform-wage model and the stated curves.



Unregulated monopsony: $L = 12$, wage 12, ME 18
Competitive benchmark with the same curves: $L = 16$, wage 14

The wage is £12 although marginal employment cost at the chosen quantity is £18.

A **national minimum wage** is a legal floor for covered workers. In the competitive market above, floor 20 gives labour demand 10 and supply 28: excess supply 18 worker-hours, with employment 10 in the simple model. A floor below 14 is not binding there. Compliance, coverage, hours, productivity, enforcement and demand elasticity affect actual outcomes. Excess supply in the model is not a complete measure of a country's recorded unemployment.

Monopsony floors. In the monopsony example, a floor of 14 makes marginal employment cost 14 while up to 16 worker-hours are available at that wage. Hiring expands to 16, where $MRP = 14$. Above 16 the employer must raise the uniform wage and marginal cost jumps above 14. A higher floor of 20 instead gives demand 10 and available supply 28, so the employer hires 10, below its original 12. A wage floor can raise both wage and employment in monopsony, but its level matters; the result does not automatically flip for every floor.

A **trade union** bargains collectively. In a competitive model, a higher negotiated wage along unchanged labour demand may lower employment. With employer buying power, bargaining may raise wages and employment towards the competitive benchmark. Productivity improvements, training, a negotiated employment agreement, union coverage and firms' responses can change the result. Analyse the structure and agreement rather than asserting that unions always destroy or create jobs.

■ Wage differentials and discrimination

A **wage differential** is a difference in pay between workers or jobs. Explain both demand and supply: product revenue and productivity affect MRP, while qualifications, training time, risks, location and alternatives affect available labour. A high wage does not prove that an executive personally produces that many times another worker's output. Team production makes individual contribution hard to measure; bargaining, pay-setting institutions and employer power also matter.

Discrimination can affect pay, hiring, promotion or access to training because of characteristics unrelated to the relevant job contribution. A raw average pay gap alone does not prove its size or cause: compare hours, occupation, experience, opportunity and pay-setting evidence. Equal-pay enforcement and better access may improve fairness and allocation; assess implementation rather than assuming a law removes the gap immediately.

■ Transfer earnings and economic rent

Transfer earnings are the minimum payment needed to keep a resource in its current use; **economic rent** is payment above that amount. A worker earning £20 per hour whose best feasible alternative pays £16 has transfer earnings 16 and rent 4 in this simplified comparison. Economic rent does not mean house rent and is not automatically profit or evidence of discrimination.

For the competitive occupational market with $L = 16$, wage 14 and supply $w = 6 + 0.5L$, total payment is the rectangle wL . The area below supply gives transfer earnings; the area above supply up to the wage gives rent.

$$\text{total payment} = wL = 14(16) = 224 \text{ £ per period}$$

$$TE = \frac{1}{2}(w_0 + w^*)L = \frac{1}{2}(6 + 14)(16) = 160 \text{ £ per period}$$

$$ER = wL - TE = 224 - 160 = 64 \text{ £ per period}$$

More elastic occupational supply tends to mean a smaller rent share for a given payment diagram; perfectly elastic supply gives all transfer earnings, perfectly inelastic supply gives all rent in the limiting model. Training, mobility and the time allowed change alternatives and elasticity. Be clear whether the alternative is another employer or leaving the occupation: that choice changes the relevant transfer earnings.

Exam application

Attempt before reading the reasoning. A proposal sets a wage floor at 20. Compare effects under the competitive and monopsony models above, and decide whether employment must rise. Then explain what a lower Gini would and would not show about the lowest-income group.

Reasoning. At 20, employment is 10 in both stated models. It falls from 16 competitively and from 12 under the unregulated monopsony. The comparison floor of 14 raises monopsony employment to 16, which shows why the floor's level matters. A lower Gini means lower overall measured inequality under comparable definitions; crossing curves show it need not raise every group's income share. An answer should identify the relevant model, work through its mechanism, use the diagram or data and defend a conditional conclusion. List alone does not supply the analysis.

Vocabulary card meanings

nationalisation: Bringing a private firm into ownership by the state. competition policy: Laws that limit collusion and the abuse of a strong market position. equality: People having the same income, or the same chances. supply of labour: The hours people are willing to work at each wage. production quota: A legal cap on how much may be produced. prohibition: A legal ban on making or selling something. licence: Official permission required before an activity may begin. nudge: A small change in how a choice is shown, meant to steer behaviour. absolute poverty: Being unable to buy the basics needed to stay alive. negative income tax: A state top-up that shrinks as a person's earnings rise. universal benefits: State payments given with no test of the recipient's income. means-tested benefits: State payments given only after income and savings are checked. economic rent: Pay above the least amount needed to keep a factor in its present use.