

A-level ECONOMICS

Paper 1 Markets and Market Failure

Thursday 18 May 2023

Morning

Time allowed: 2 hours

Materials

For this paper you must have:

- an AQA 12-page answer book
- a calculator.

Instructions

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Write the information required on the front cover of your answer book.
The **Paper Reference** is 7136/1.
- In **Section A**, answer **EITHER** Context 1 **OR** Context 2.
- In **Section B**, answer **ONE** essay.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- There are 40 marks for **Section A** and 40 marks for **Section B**.

Advice

- You are advised to spend 1 hour on **Section A** and 1 hour on **Section B**.

Section A

Answer **EITHER** Context 1 **OR** Context 2.

EITHER

Context 1

Total for this context: 40 marks

Electric cars and battery production

Study **Extracts A, B and C** and then answer **all** parts of Context 1 which follow.

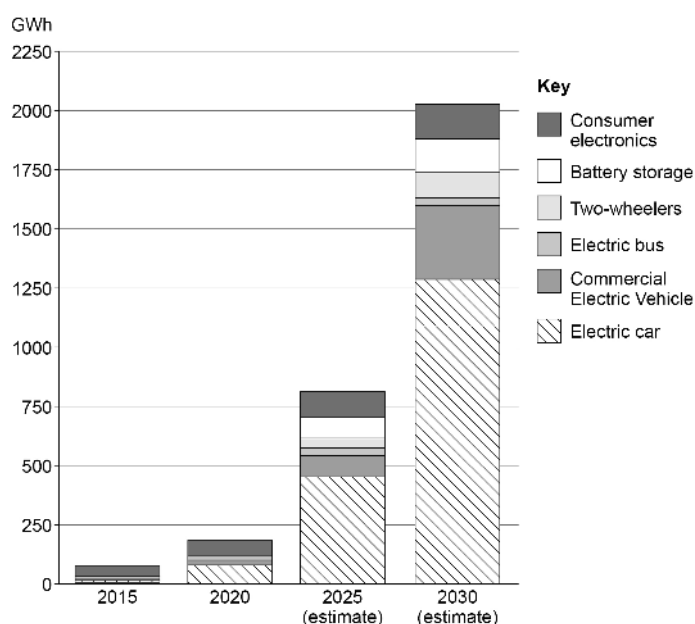
Extract A

Table 1: Sales of cars by fuel type in the UK, 2020 and 2021

	2020	2021
Diesel	261 772	135 773
Petrol	903 961	762 103
Battery Electric	108 205	190 727
Hybrid Electric*	357 126	558 578
Total	1 631 064	1 647 181

*Hybrid Electric cars use lithium-ion batteries and diesel/petrol

Figure 1: UK demand for lithium-ion batteries, Gigawatt hours (GWh), 2015 to 2030



Extract B: The electric vehicle revolution

Sales of electric vehicles (EVs) in Europe have jumped from 198 000 in 2018 to an expected 1.17 million in 2021. They are an alternative to petrol and diesel vehicles, which create damaging emissions through air pollution and contribute to climate change. EVs still only make up about 1% of all cars on the road, but global sales of EVs are forecast to reach 10.7 million by 2025 and then 28.2 million by 2030. Carmakers have announced a total of \$330 billion of investment into electric and battery technology over the next five years. In fact, several manufacturers have begun to phase out petrol and diesel cars altogether.

5

Why is this happening now? Regulations are becoming tighter. Ambitious plans to expand the use of electric vehicles are one of the most obvious ways to meet emissions targets set by national governments. The UK has already announced plans to ban the sale of petrol and diesel cars by 2035. Meeting this target will require government spending to install the charging points needed to convince consumers to switch to electric vehicles.

10

Another reason for the EV revolution is the improved choice of such vehicles. There are around 330 EV models on sale today, compared with just 86 five years ago. While many are still more expensive than petrol vehicles, they boast substantially lower running costs, even more so as global petrol prices rise. Also, many governments still offer generous financial incentives to encourage people to purchase EVs.

15

Driving cars of all fuel types creates environmental problems, traffic congestion and road traffic accidents. Critics have suggested that, instead of governments offering subsidies and tax exemptions for electric vehicles, all vehicle owners should be forced to pay the full costs of their driving. This would incentivise people to consider using public transport, cycling or walking. 20

Source: News reports, 2021

Extract C: Are electric vehicles as green as claimed?

Redwood Materials, a US firm, recycles discarded batteries into a fresh supply of metals needed for new cars. Its goal is to solve the most glaring problem for electric vehicles. While they are 'zero emission' when being driven, the mining, manufacturing and disposal process for batteries could soon become an environmental disaster. Cobalt, one of the metals used in batteries, typically originates in the Democratic Republic of Congo, where it is extracted in large energy-intensive industrial mines and also dug by hand using basic tools. Then it might be shipped to Finland, home to Europe's largest cobalt refinery, before heading to China where the majority of the world's battery production occurs. From there it can be shipped to the US or Europe for packing, then shipped again to car factories. In all, the cobalt can travel more than 20 000 miles before becoming part of a 'zero emission' car. 5 10

Every day, about 60 tonnes of old smartphones, power tools and scooter batteries are delivered to Redwood's warehouse. The firm then separates out the nickel, cobalt and lithium, so that they can re-enter the supply chain as the building blocks for new lithium-ion batteries. Reclaiming these metals at scale is a massive task: roughly 10 000 smartphones need to be recycled to produce one EV battery. 15

Redwood hope to play a role in the emergence of 'the circular economy' – a grand hope born in the 1960s that society can re-engineer the way goods are designed, manufactured and recycled so as to avoid waste. It has been estimated that recycling batteries could account for 30% of the emissions cuts needed to meet the targets set in the Paris climate change agreement and 'create 10 million safe and sustainable jobs around the world' by 2030. 20

Source: News reports, 2021

0 1 Using the data in **Extract A (Table 1)**, calculate the index of total car sales in 2021 if, in the base year, total car sales were 1.25 million.
Give your answer to **two** decimal places. [2 marks]

0 2 Explain how the data in **Extract A (Table 1 and Figure 1)** show that developments in the car market are the main reason for the changing demand for lithium-ion batteries in the UK. [4 marks]

0 3 **Extract C** (lines 3–4) states that 'the mining, manufacturing and disposal process for batteries could soon become an environmental disaster.'
With the help of a diagram, explain why the production and sale of lithium-ion batteries might lead to market failure. [9 marks]

0 4 **Extract B** (lines 20–21) states that 'all vehicle owners should be forced to pay the full costs of their driving. This would incentivise people to consider using public transport, cycling or walking.'
Evaluate policies that could be used to reduce the environmental impact of all types of car. [25 marks]

Turn over ►

Do **NOT** answer Context 2 if you have answered Context 1.

OR

Context 2

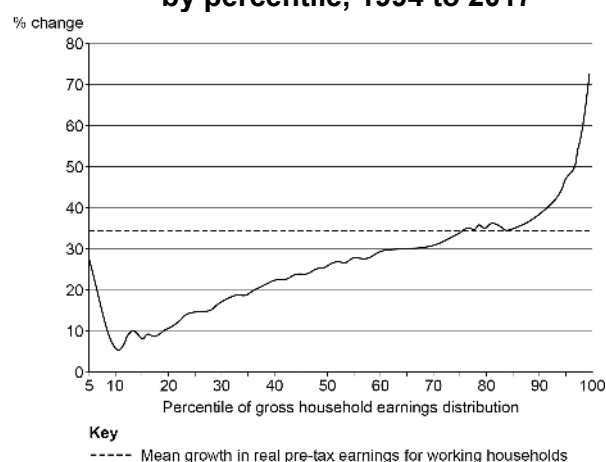
Total for this context: 40 marks

In-work poverty in the United Kingdom

Study **Extracts D, E and F** and then answer **all** parts of Context 2 which follow.

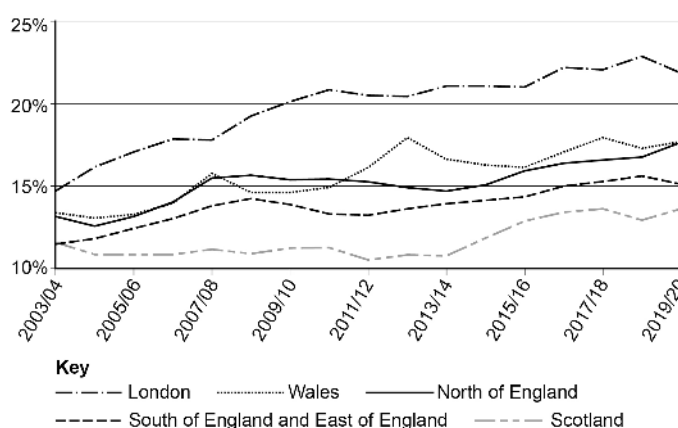
Extract D

Figure 2: Growth in real pre-tax earnings for working households, by percentile, 1994 to 2017



Source: Institute for Fiscal Studies, 2020

Figure 3: In-work poverty rate, by selected UK region, 2003/04 to 2019/20



Source: Institute for Public Policy Research, 2021

Extract E: In-work poverty is on the rise in the UK

Approximately 14 million people are in poverty in the UK, more than one in five of the population, including 4 million children and 2 million pensioners, up by 400 000 and 300 000 respectively over the past five years. A family is classified as being in poverty if it has an income, after housing costs, of less than 60% of the median income for their family type. A family's income includes earnings from employment, self-employment and state benefits.

5

For generations, politicians in the UK have highlighted the important role of employment in tackling poverty. However, employment is no longer a strong defence against poverty. The Joseph Rowntree Foundation, an anti-poverty group, said that while paid employment does reduce the risk of poverty, about 56% of people living in poverty in 2018 were in working households, compared with 39% 20 years ago. Seven in 10 children in poverty are now in a working household, and such in-work poverty is particularly common amongst single-parent families. Working single parents accounted for three in 10 households in poverty in 2018, compared with two in 10 in 2011. Working poverty among single-earning couple households also rose dramatically, increasing from 19% in 2003–04 to 31% last year, meaning this group now experiences poverty rates almost as high as those households where no one works full time.

10

15

Amid concerns that the poorest receive worse healthcare and have the most insecure jobs, the Government faces a huge task if it is to 'level up' incomes across the UK by narrowing the gap between the wealthiest and poorest regions. Some out-of-work benefits have not kept up with inflation, putting downward pressure on wages, contributing to the rise in in-work poverty. Other factors include rising prices of energy, essential groceries and rented properties.

20

Source: News reports, 2021

Extract F: Solutions to the problem of in-work poverty

Charities and think tanks have called for action to reduce job insecurity, lower housing costs and increase earnings for low-paid workers. Frances O'Grady, the former general secretary of the Trades Union Congress, said: "The government must crack down on business models based on poverty pay and insecure jobs. Zero-hour contracts should be banned and the minimum wage must go up to at least £10 per hour right away." The Chartered Institute for Personnel and Development called on companies to play their part in preventing working poverty by paying employees a living wage: 'Not only is there a strong moral case for paying staff a living wage, there is also a compelling business case, with research showing that money and debt problems may affect people's performance at work, which can hurt a company's profits.'

5

10

If the labour market cannot pay sufficiently high wages to prevent poverty, a possible policy is to use means-tested benefits to make up shortfalls in household incomes. However, the introduction of Universal Credit, which rolls six benefits into one, did not help some low-income families because of complexities involved in claiming it, and the time lag before claimants could receive their first payment.

15

Increasingly, households in poverty have been looking beyond both employers and the government for support. Charities and food banks have never been busier. The Trussell Trust reported that in 2020–21, 2.5 million emergency food parcels were delivered, an increase of 128% on 2015–16. Even professional workers are sometimes using food banks, alongside other sources of support. The Royal College of Nursing reported that, during the previous 12 months, more than half of their members had relied on food banks, credit or borrowing from friends and family to pay essential living costs.

20

Source: News reports, 2021

0 5

Use the data in **Extract D (Figure 2)** to calculate the difference between the mean and median rate of growth of working households' real pre-tax earnings, over the period 1994–2017.

[2 marks]

0 6

Explain how the data in **Extract D (Figure 3)** show that employment is an increasingly ineffective protection against poverty.

[4 marks]

0 7

Extract E (lines 19–20) states that 'Some out-of-work benefits have not kept up with inflation, putting downward pressure on wages, contributing to the rise in in-work poverty.'

With the help of a diagram, explain how a reduction in out-of-work benefits may lead to lower wages in some labour markets.

[9 marks]

0 8

Extract F (lines 1–2) states that 'Charities and think tanks have called for action to reduce job insecurity, lower housing costs and increase earnings for low-paid workers.'

Using the extracts and your knowledge of economics, evaluate policies that could be used to reduce in-work poverty in the UK.

[25 marks]**Turn over ►**

Section B

Answer **one** essay from this section.

Each essay carries 40 marks.

EITHER**Essay 1**

Some believe that government intervention in markets is undesirable because market forces promote creativity, innovation and efficiency. Others believe that competition policy is needed to prevent firms abusing their market power.

0 9 Explain why, in long-run equilibrium, monopolistically competitive markets are neither productively nor allocatively efficient. **[15 marks]**

1 0 Assess the view that competition policy is likely to lead to markets becoming less efficient in the long run. **[25 marks]**

OR**Essay 2**

Since the 1980s, politicians have been freeing up one side of the labour market by reducing the power of trade unions and their influence over the supply of labour. Meanwhile, they have been doing very little about the monopsony power of employers.

1 1 Explain the determinants of the supply of labour to an industry. **[15 marks]**

1 2 Evaluate the view that labour markets work best when strong monopsony power is balanced by trade union power. **[25 marks]**

OR

Essay 3

Some argue that privatisation of government-owned industries is necessary to improve efficiency. However, there are several cases where privatisation has simply transferred a monopoly from the state to the private sector. Nevertheless, such private monopolies are vulnerable to the threat of new entrants challenging their dominance.

1	3
---	---

Explain how market contestability affects the performance of an industry.

[15 marks]

1	4
---	---

Discuss the view that privatisation is always beneficial because it leads to improvements in efficiency.

[25 marks]

END OF QUESTIONS

There are no questions printed on this page

Copyright information

For confidentiality purposes, all acknowledgements of third-party copyright material are published in a separate booklet. This booklet is published after each live examination series and is available for free download from www.aqa.org.uk.

Permission to reproduce all copyright material has been applied for. In some cases, efforts to contact copyright-holders may have been unsuccessful and AQA will be happy to rectify any omissions of acknowledgements. If you have any queries please contact the Copyright Team.

Copyright © 2023 AQA and its licensors. All rights reserved.



Question
number

01

$\text{Index} = (\text{2021 total} \div \text{base year total}) \times 100$

$= (1\,647\,181 \div 1\,250\,000) \times 100 = 1.317745 \times 100$

Index of total car sales in 2021 = 131.77

02

The demand for lithium-ion batteries is a derived demand: it depends on the demand for the products that use them, and Figure 1 shows that electric cars are by far the largest of these.

Total UK battery demand rose from about 80 GWh in 2015 to about 200 GWh in 2020 and is forecast to reach about 2030 GWh by 2030. Demand from electric cars rises from almost zero in 2015 to about 80 GWh in 2020 (around 40% of the total), then to about 450 GWh in 2025 (56%) and about 1280 GWh in 2030 (63%). The other uses, such as consumer electronics, battery storage and two-wheelers, grow far less.

Table 1 shows why: total car sales barely changed (1 631 064 to 1 647 181), but battery electric sales rose by 76.3% (108 205 to 190 727) and hybrid sales by 56.4% (357 126 to 558 578), while diesel and petrol sales fell. This switch in the car market towards cars that need lithium-ion batteries is therefore the main reason battery demand is rising.

03

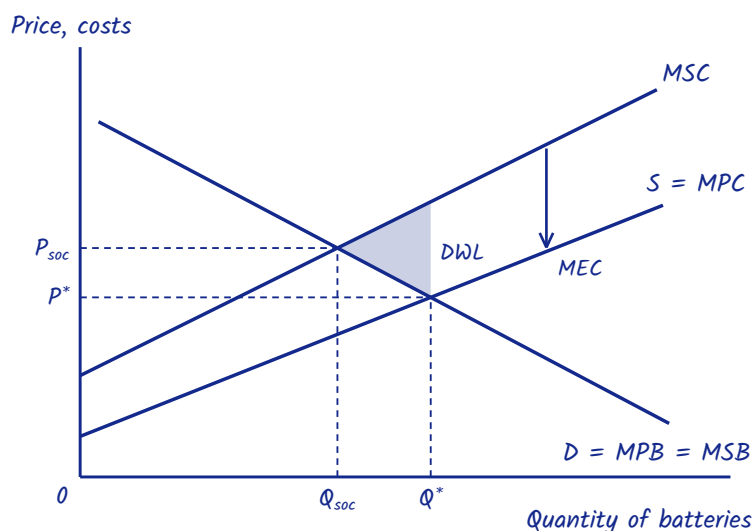
Market failure occurs when the price mechanism fails to allocate scarce resources efficiently, so the free market output is not the one that maximises social welfare. Batteries generate negative production externalities: costs imposed on third parties outside the transaction who are not compensated.

Extract C shows these costs at each stage. Cobalt is extracted in large, energy-intensive mines in the Democratic Republic of Congo, emitting carbon and damaging land and water, and is also dug by hand in unsafe conditions. It is then shipped to Finland for refining, to China for battery production and on to the US or Europe, travelling more than 20 000 miles and emitting greenhouse gases. Finally, discarded batteries are hazardous waste and toxic metals can leak into soil and water. The atmosphere and water supplies are common resources with no owner, so no one charges for this damage (the tragedy of the

Do not write outside the box

Question
number

commons).



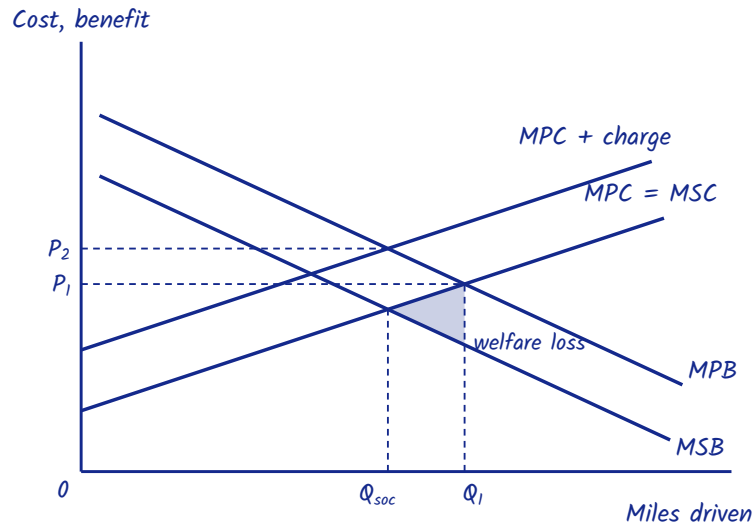
As shown in the diagram, battery producers only consider their marginal private cost (MPC), which forms the supply curve. Marginal social cost is $MSC = MPC +$ marginal external cost, so MSC lies above MPC . The free market produces Q^* at price P^* , where $MPB = MPC$, but the socially optimal output is Q_{soc} , where $MSB = MSC$. Between Q_{soc} and Q^* each extra battery has a social cost greater than its social benefit, so batteries are over-produced and under-priced (P^* is below P_{soc}). The shaded triangle is the deadweight welfare loss.

There is also information failure: if consumers believe electric cars are truly 'zero emission', demand for them and so for batteries is higher than if they were fully informed, worsening over-production. With battery demand forecast to grow tenfold by 2030 (Figure 1), the welfare loss could become much larger unless recycling, as at Redwood, reduces the external cost.

0 4

Cars of all types create negative externalities. Petrol and diesel cars emit carbon dioxide and nitrogen oxides, causing climate change and air pollution, plus noise. Electric cars have zero tailpipe emissions, but their batteries create large production and disposal externalities (Extract C), they are energy and resource intensive to build, and every car adds to congestion, tyre and brake particles and road accidents (Extract B). Because drivers ignore these external costs, driving is over-consumed and the market fails. The question is which policies best close the gap between private and social costs.

Do not write outside the box

Question
number

The approach in Extract B is to make drivers pay the full social cost through a tax or road charge. As shown in the diagram, the marginal social benefit of driving is below the marginal private benefit because of the external cost, so the market reaches Q_1 . A charge equal to the marginal external cost shifts the cost curve up to $MPC + \text{charge}$, raising the price to P_2 and cutting driving to the social optimum Q_{soc} , removing the welfare loss. The polluter pays, and the revenue could be hypothecated to fund public transport or battery recycling.

However, the success of a tax depends on its design. The marginal external cost is very hard to value, and if the charge is set too high or too low the result is government failure. Demand for driving is price inelastic in the short run, especially in rural areas with few substitutes, so a tax may raise revenue but barely reduce mileage. It is also regressive, hitting low-income commuters hardest, and politically unpopular, which is why UK fuel duty has been frozen for years. Fuel duty also misses electric cars entirely, so it cannot tackle congestion as EVs spread. A per-mile road charge that varies by time and place, as with the London congestion charge, is better targeted because congestion and accident costs arise whatever the fuel type, and in the long run demand becomes more elastic as people move house or change jobs.

A second policy is subsidising electric cars and charging points, as many governments do (Extract B). Subsidies lower the price of the cleaner substitute, and with EVs already having lower running costs and around 330 models on sale, battery electric sales rose by 76.3% in 2021. But subsidies only change the fuel

Do not write outside the box

Question
number

type: they do nothing about congestion or accidents, and they shift pollution into battery production, where cobalt may travel 20 000 miles. Many subsidies go to richer households who would have bought an EV anyway, and there is a large opportunity cost of the public funds. This is why critics in Extract B argue that tax exemptions for EVs should end.

Regulation is a third option, such as the UK ban on new petrol and diesel car sales by 2035, emission standards and low emission zones like ULEZ. Regulation gives certainty and is effective where the damage is severe, and it could require manufacturers to recycle batteries. However, it is a blunt tool that ignores differences in the costs of reducing pollution between people and firms, compliance costs are high, and a ban may lead owners to keep old, dirty cars for longer. A tradable permit scheme, for example for battery disposal or manufacturers' fleet emissions, could achieve the same cut at lower cost because firms that can reduce pollution cheaply sell permits to those that cannot.

Fourth, the government could subsidise public transport, cycling and walking, which are substitutes for car travel. If the cross elasticity of demand is high, cheaper and better buses and trains will draw people out of cars and cut every type of environmental impact at once. Nudges, such as making the default workplace scheme a cycle-to-work scheme, use behavioural insights at low cost. The weakness is that many journeys have no realistic substitute, so the cross elasticity may be low, and new road space freed up tends to be filled by new car journeys.

Finally, the government could fund research into battery recycling, which has positive externalities and supports a circular economy. Extract C claims recycling could deliver 30% of the emissions cuts needed for the Paris targets and 10 million jobs, but it takes 10 000 smartphones to produce one EV battery, so the benefits are uncertain and long term. A free market argument is that consumers are already switching to cleaner cars as petrol prices rise, but the externalities remain unpriced, so market forces alone will not reach the social optimum.

In conclusion, no single policy is enough. The most effective approach is to make all drivers pay the full social cost through a per-mile road charge that replaces

Do not write outside the box

Question
number

fuel duty, because it targets congestion and pollution from every type of car and raises revenue, combined with spending that revenue on public transport and battery recycling, and regulation of battery disposal. How well this works depends on valuing the external cost accurately, on how price elastic driving is, which rises in the long run, and on political will to accept an unpopular but efficient policy.

Do not write outside the box

Question
number

05

Mean growth (dashed line) = 34%

Median = 50th percentile = 26%

Difference = $34 - 26 = 8$ percentage points

06

In-work poverty describes households where at least one person works but income after housing costs is below 60% of the median income. If employment protects against poverty less and less, the in-work poverty rate should rise over time in most regions.

Figure 3 shows exactly this. London's in-work poverty rate rose from about 15% in 2003/04 to 22% in 2019/20, peaking at about 23% in 2018/19. Wales and the North of England both rose from about 13% to 17.5%, the South and East of England from 12% to 15%, and Scotland from 12% to 14%. Every region shown has a higher rate at the end of the period than at the start, and most peaked in 2017/18 or 2018/19. Since the rise is widespread rather than in one region, having a job is increasingly failing to lift households above the poverty line.

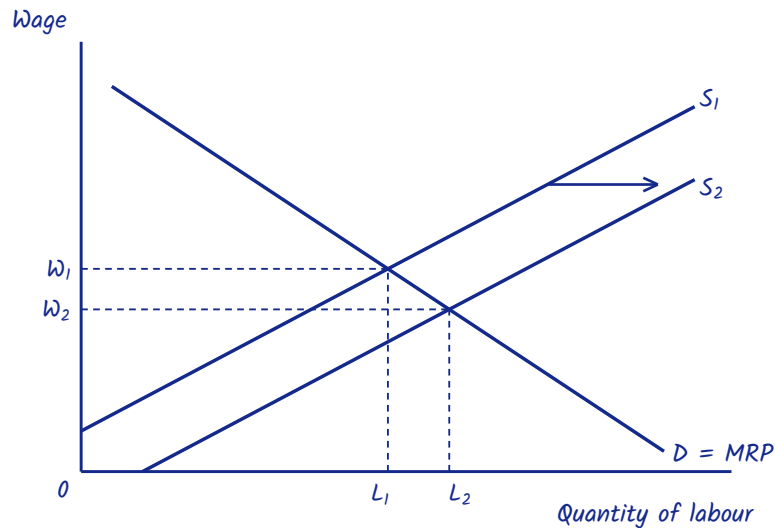
07

Out-of-work benefits, such as Universal Credit for job seekers, give people an income when they are not working. They act as a wage floor because few people will accept a job that pays little more than they receive in benefits, so they set a reservation wage in low-paid labour markets.

If benefits are cut in real terms because they are not raised in line with inflation, the opportunity cost of not working rises and the reservation wage falls. More unemployed people search harder for work and are willing to accept lower-paid jobs, so the supply of labour to low-skilled markets such as retail, hospitality and care increases.

Do not write outside the box

Question
number



As shown in the diagram, supply shifts from S_1 to S_2 . At the original wage w_1 , there is now an excess supply of labour, so firms can fill vacancies at lower wages and the wage falls to w_2 , while employment rises from L_1 to L_2 . Workers also have less bargaining power because the alternative of benefits is less attractive, so firms may cut wage offers to existing employees too.

The size of the wage fall depends on the elasticity of demand for labour: the more inelastic the demand, the larger the fall in wages and the smaller the rise in employment. The effect is mainly direct in low-paid sectors where wages are close to benefit levels, and the National Minimum Wage limits how far wages can fall, though lower pay at the bottom may indirectly hold down pay for more senior staff.

There is also a demand-side effect. Benefit claimants have a high marginal propensity to consume, so lower benefits reduce spending on goods and services.

As labour is a derived demand, the demand for labour falls, putting further downward pressure on wages in these markets.

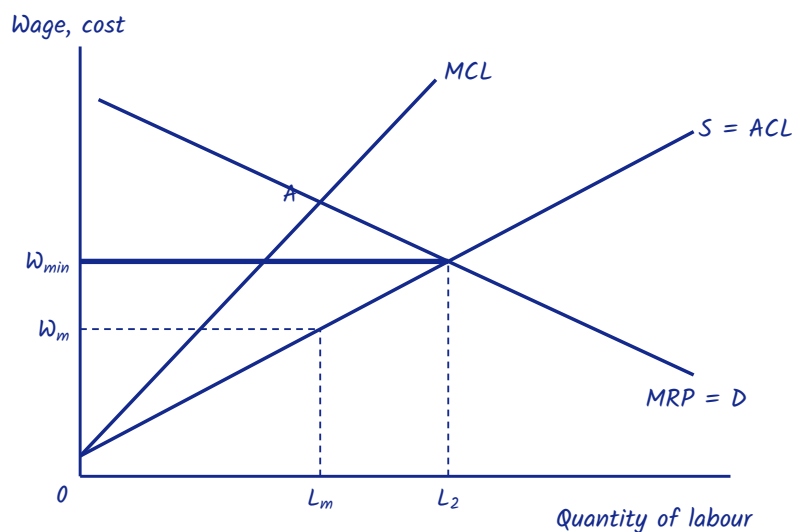
08

In-work poverty has become a growing problem: about 56% of people in poverty in 2018 lived in working households, compared with 39% twenty years earlier, and seven in ten children in poverty are in a working household (Extract E). Its causes include low hourly pay, insecure hours such as zero-hour contracts, benefits that have not kept up with inflation, the decline of trade unions, the gig economy and rising prices of rent, energy and groceries. Because poverty also brings worse

Do not write outside the box

Question
number

health and education, it creates negative externalities and is an inequitable outcome of the market, which justifies intervention.



The first policy, called for by the TUC in Extract F, is a higher minimum wage of at least £10 per hour. In a competitive labour market a minimum wage above equilibrium creates an excess supply of labour, so some workers lose their jobs. However, many low-wage employers, such as care homes or large retailers in small towns, have monopsony power. As shown in the diagram, a monopsonist hires L_m where $MCL = MRP$ and pays only w_m . A minimum wage at w_{min} makes the supply curve horizontal up to L_2 , so the marginal cost of labour equals w_{min} and the firm raises both pay and employment. There is also an efficiency wage argument (Extract F): better-paid staff have fewer money worries, are more productive and less likely to quit, which may raise profits.

Evaluation: the effect depends on the wage elasticity of demand for labour and on how high the minimum wage is relative to median pay. A single national rate may cost jobs in low-wage regions, firms may cut hours or automate, and the policy is poorly targeted at households, since poverty depends on hours worked and family size. A single-earner family with children can still be poor at £10 per hour.

Second, banning zero-hour contracts would make incomes more stable and allow families to budget and access credit. But some workers, such as students, value flexibility, and firms may respond by hiring fewer workers or offering short fixed-hour contracts, reducing labour market flexibility and possibly raising

Do not write outside the box

Question
number

unemployment.

Third, the government can use means-tested benefits such as Universal Credit to top up low household incomes. These are targeted at need, including single parents, who make up three in ten households in poverty. However, Extract F notes that complexity and the wait for a first payment stopped some families benefiting, take-up is reduced by stigma, and the withdrawal rate as earnings rise creates a poverty trap with a high effective marginal tax rate that weakens incentives to work more hours. Raising benefits in line with inflation would directly address the cause identified in Extract E, but has a large opportunity cost.

Fourth, raising the income tax personal allowance or cutting National Insurance for low earners increases take-home pay. Yet many of the poorest already earn below the allowance, so most of the gain goes to better-off households, and tax revenue falls.

Fifth, policies could reduce living costs, for example building more social housing, energy price caps and free childcare, which lets single parents work more hours. Increasing housing supply tackles a root cause, but has long time lags, while rent controls risk shortages, a form of government failure. In the long run, education and training raise workers' productivity and therefore their MRP and wages, and the 'levelling up' agenda aims to narrow regional gaps, but the effects are slow and uncertain.

Finally, the problem could be left to market forces and charities. Firms do have an incentive to pay more if it raises productivity, and the chance to earn more motivates people to train and work hard. But the 128% rise in Trussell Trust food parcels to 2.5 million in 2020 to 2021, and half of nurses relying on food banks or borrowing, show that charity is filling gaps rather than solving them, and its provision is uneven and voluntary.

In conclusion, a combination is needed. In the short run the most effective policies are targeted ones: making Universal Credit simpler and faster and uprating it with inflation, alongside steady, evidence-based rises in the minimum wage that exploit monopsony power without large job losses. In the long run, more affordable

Do not write outside the box

**Question
number**

housing and better skills tackle the causes. Which matters most depends on whether low pay, insecure hours or high living costs are the main driver for each household, and every policy carries a risk of government failure through cost, poor targeting or disincentives.

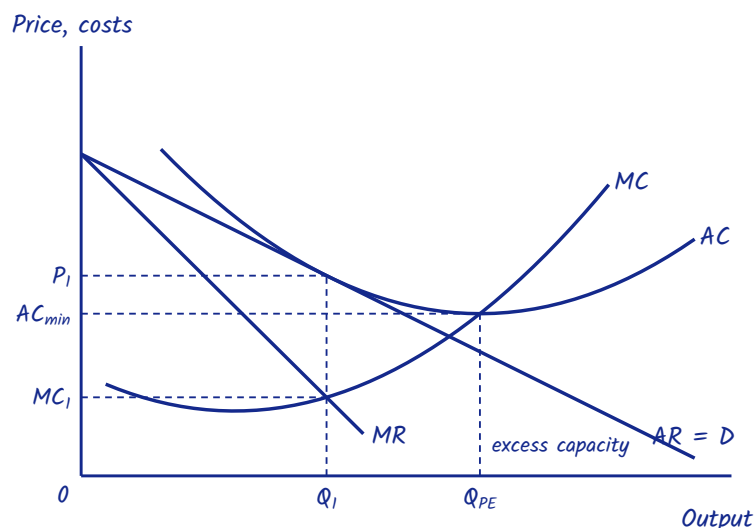
Do not write outside the box

Question
number

09

Monopolistic competition is a market structure with many firms selling differentiated products, low barriers to entry and exit, and some price-making power because each firm faces a downward-sloping demand curve. Examples include restaurants, hairdressers and coffee shops. Firms are assumed to profit maximise where $MC = MR$.

In the short run a firm may make supernormal profit. Because barriers to entry are low, this attracts new firms in the long run. Each existing firm loses customers, so its demand (AR) curve shifts left and becomes more price elastic as more close substitutes are available. Entry continues until supernormal profit has been competed away and each firm makes normal profit, where AR is tangent to AC. If firms were making losses, firms would leave until the same position is reached.



As shown in the diagram, the long-run equilibrium is at output Q_1 and price P_1 , where $MC = MR$ and $AR = AC$, so only normal profit is made.

Productive efficiency means producing at the lowest point of the average cost curve, where $MC = AC$, so goods are made with the fewest resources. Because the firm's AR curve slopes downwards, the point of tangency with AC must be on the falling part of the AC curve, to the left of its minimum. The firm produces Q_1 , which is less than Q_{PE} , the output at minimum average cost, and its average cost P_1 is above AC_{min} . The firm has excess capacity: it could lower its average costs by producing more, but cannot sell more without cutting its price below AC. A high street with many half-empty restaurants is an example. Therefore the

Do not write outside the box

Question
number

market is not productively efficient.

Allocative efficiency occurs where price equals marginal cost, so the value consumers place on the last unit (shown by the price) equals the cost of the resources used to make it, and welfare is maximised. In long-run equilibrium $P_1 = AR$, but $MC = MR$, and since MR lies below AR for a downward-sloping demand curve, P_1 is greater than MC_1 . Consumers value an extra unit more than it costs to produce, so too little is produced and there is a loss of welfare. This is the result of the market power that product differentiation gives each firm.

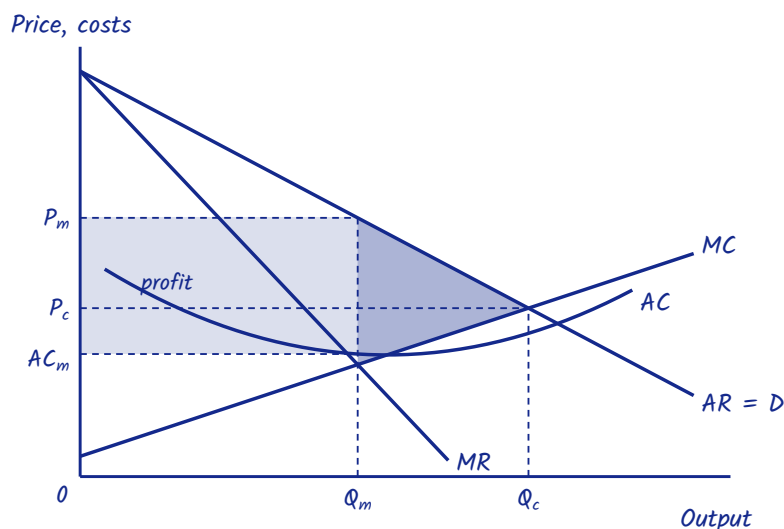
By contrast, in perfect competition each firm's demand curve is horizontal, so the tangency occurs at the minimum of AC and $P = MC = AC$, giving both types of efficiency. Monopolistic competition differs only because products are differentiated. Some economists argue that this inefficiency is the price consumers pay for variety and choice, and that firms still have an incentive to innovate to gain a temporary advantage, but in the long run the market is neither productively nor allocatively efficient.

10

Competition policy is government action to promote competition and prevent firms abusing market power. In the UK it is enforced by the Competition and Markets Authority (CMA), which since Brexit also reviews large global mergers. Its tools include investigating and blocking mergers, banning cartels and other anti-competitive agreements, with fines of up to 10% of worldwide turnover, preventing abuse of a dominant position such as predatory pricing, and market investigations to remove barriers to entry. Efficiency includes productive efficiency (lowest average cost), allocative efficiency ($P = MC$), X-efficiency (no wasted resources) and dynamic efficiency (innovation and investment over time). The long run is the period in which all factors can vary and firms can enter, exit and invest.

Do not write outside the box

Question
number



The case that competition policy improves efficiency rests on the monopoly diagram. A monopolist produces Q_m where $MC = MR$ and charges P_m , above marginal cost, so it is allocatively inefficient and the darker triangle is the deadweight loss compared with the competitive outcome P_c , Q_c . It earns supernormal profit (lighter rectangle) and, protected by barriers to entry, has little pressure to control costs, so X-inefficiency is likely. By blocking mergers, such as the proposed Sainsbury's and Asda merger in 2019, and fining cartels, the CMA keeps prices closer to marginal cost and forces firms to keep costs down. Rivalry also pushes firms to innovate to win customers, so competition can raise dynamic efficiency in the long run.

However, there are strong arguments that competition policy may make markets less efficient. First, blocking mergers can stop firms exploiting economies of scale. If a merged firm would have a much lower long-run average cost, the cost saving could outweigh the deadweight loss from higher market power (the Williamson trade-off). Keeping firms small may leave them productively inefficient and less able to compete internationally. In natural monopolies, such as networks, more competition would mean wasteful duplication.

Second, supernormal profit funds research and development. Schumpeter argued that large firms with market power are the main source of innovation, and that the prospect of monopoly profit is the reward for taking risks. If competition policy limits profits or breaks up successful firms, it may reduce the incentive and the funds to innovate, harming dynamic efficiency, especially in industries like

Do not write outside the box

Question
number

pharmaceuticals where research costs are huge.

Third, competition policy creates bureaucracy and red tape. Investigations take years, firms spend heavily on lawyers and compliance, and uncertainty about whether a deal will be approved can deter investment. The CMA initially blocked Microsoft's takeover of Activision in 2023 before approving a restructured deal, showing how long and costly the process can be.

Fourth, there is the risk of government failure. The CMA has imperfect information about future costs and innovation, so it may block beneficial mergers or allow harmful ones. Regulators may be influenced by political pressure or lobbying, and the resources used by the CMA have an opportunity cost.

On the other hand, these risks can be exaggerated. The CMA judges cases individually rather than applying rigid rules, and it can clear a merger if there are relevant customer benefits such as lower costs, so efficient mergers are often allowed. There is no guarantee that a monopolist will use its profits for

investment: it may pay them out as dividends or waste them through X-inefficiency. In digital markets, dominant firms buying up start-ups to remove future rivals ('killer acquisitions') may reduce innovation, so strong competition policy can increase dynamic efficiency in the long run. Cartels never improve efficiency, so fines for price fixing are clearly beneficial.

In conclusion, competition policy is unlikely to make most markets less efficient in the long run. In markets with limited economies of scale and a high risk of collusion, such as groceries, it clearly raises allocative, productive and X-efficiency.

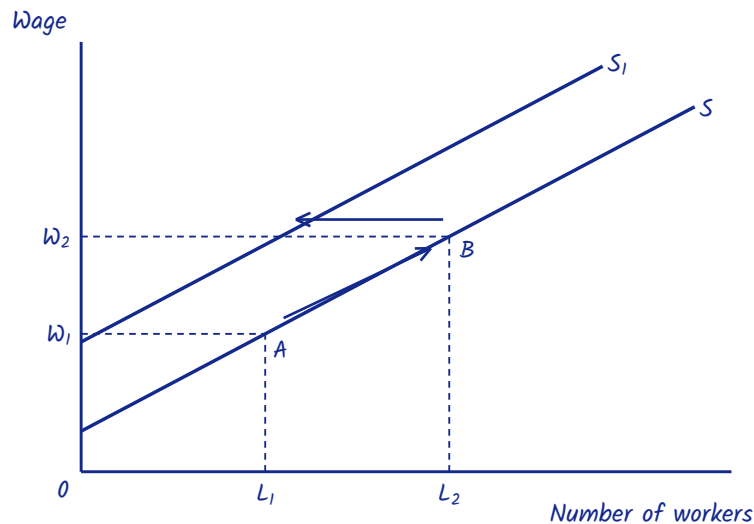
The view is strongest in markets with large economies of scale or very high research costs, where blocking mergers may reduce productive and dynamic efficiency. Whether policy helps therefore depends on the market and on how flexibly and accurately the CMA applies it; a case-by-case approach that weighs efficiency gains against market power is the best way to avoid the inefficiency the view warns of.

Do not write outside the box

Question
number

1 1

The supply of labour to an industry is the number of workers (or hours of work) that people are willing and able to offer to that industry at each wage rate. The industry supply curve slopes upwards because a higher wage attracts workers from other industries, increases the opportunity cost of not working and encourages existing workers to work more hours. It is more elastic than the supply of labour to the whole economy, because workers can switch between industries.



As shown in the diagram, a rise in the wage from w_1 to w_2 causes an extension along the supply curve from A to B , with employment rising from L_1 to L_2 . A change in any other determinant shifts the whole curve, for example to the left from S to S_1 , so fewer workers are available at every wage.

The first determinant is wages in other industries. If pay rises in an alternative industry that uses similar skills, for example warehouse work compared with retail, some workers switch, and supply to the original industry shifts left. Wages elsewhere set the opportunity cost of working in this industry.

Second, non-wage benefits affect supply. Pensions, holidays, private health insurance, flexible hours and job security make a job more attractive, so supply increases. Job satisfaction and working conditions also matter: nursing and teaching attract workers partly because of their vocational appeal, whereas dangerous or unpleasant jobs, such as oil rig work, need a compensating wage differential to attract enough workers.

Third, the qualifications and skills required and the number of people who have them. Industries needing long and costly training, such as medicine, which takes

Do not write outside the box

Question
number

at least five years, have a limited and inelastic supply in the short run.

Apprenticeships and training schemes can increase supply over time by raising the number of qualified people.

Fourth, the size and structure of the working population. Demographic change, the participation rate and immigration all affect supply. After the UK left the EU, the supply of labour to agriculture and hospitality fell because fewer EU workers were available, shifting supply left and causing shortages.

Fifth, the tax and benefits system. Higher income tax rates reduce take-home pay, and generous out-of-work benefits raise the reservation wage, both of which may reduce supply, while in-work benefits can encourage people to take jobs.

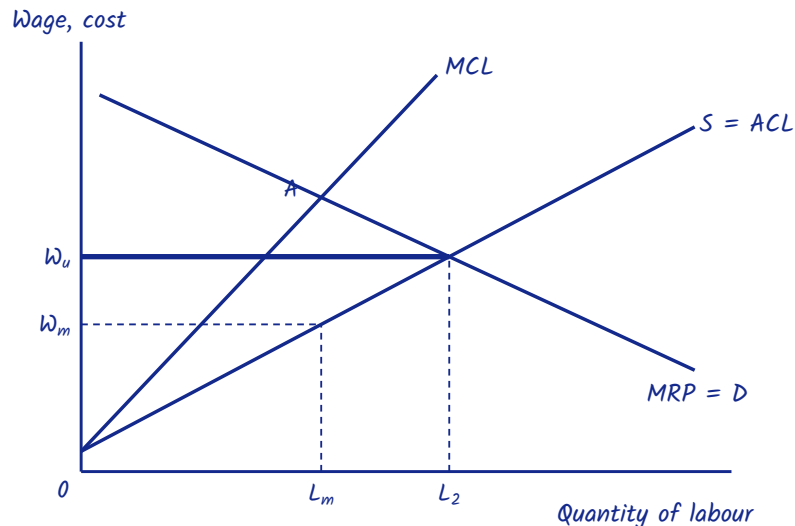
Sixth, trade unions and professional bodies can restrict entry through licensing or closed shops, reducing supply in order to raise wages. Geographical mobility also matters: high housing costs in London reduce the supply of workers such as nurses and teachers there, while better information about vacancies increases supply.

Finally, the elasticity of labour supply depends on the length of training, how specialised the skills are and the time period: supply is more elastic in the long run, as more people can train and move into the industry. In summary, the wage determines movements along an industry's supply curve, while wages elsewhere, non-wage benefits, skills, population, taxes and benefits, and unions determine its position.

1 2

A labour market works well if workers are allocated efficiently, wages reflect workers' marginal revenue product, firms can recruit the workers they need, skills are developed and productivity rises. A monopsony is a market with a single, or dominant, buyer of labour, which can set the wage. A trade union is an organisation of workers that bargains collectively over pay and conditions, acting like a monopoly seller of labour. When both exist, the market is a bilateral monopoly.

Do not write outside the box

Question
number

A monopsonist faces the upward-sloping market supply curve (ACL). To hire one more worker it must raise the wage for all workers, so the marginal cost of labour (MCL) lies above ACL. As shown in the diagram, the profit-maximising monopsonist hires L_m , where $MCL = MRP$ (point A), but pays only w_m , read off the supply curve. Both the wage and employment are lower than in a competitive market, and workers are paid less than their MRP. Examples include the NHS as the main employer of nurses, and large employers such as supermarkets or warehouses in small towns.

If a trade union negotiates a wage of w_u , the firm cannot hire anyone for less, so the supply curve becomes horizontal at w_u up to L_2 , and the marginal cost of labour equals w_u over that range. The firm now hires until $w_u = MRP$, so employment rises from L_m to L_2 as well as the wage rising. Union power therefore corrects the monopsony distortion, moving the market towards the competitive outcome, which supports the view. Unions also bring benefits beyond pay: collective bargaining is cheaper than negotiating individually, unions give workers a voice, which can reduce staff turnover and improve productivity, and they often support training and health and safety.

However, there are significant problems. With one buyer and one seller there is not really a market but a negotiation, and economic theory cannot predict the outcome: the wage could be anywhere between w_m and the union's target, depending on relative bargaining power, negotiating skill and the economic situation. If the union is stronger and pushes the wage above the competitive

Do not write outside the box

Question
number

level, employment falls below L_2 and could even fall below L_m , so the result could be worse than monopsony alone.

Balancing power through conflict is also costly. Strikes, such as the rail and nursing strikes of 2022 to 2023, cause lost output and harm third parties such as passengers and patients. Unions may protect existing members (insiders) at the expense of the unemployed (outsiders), resist new technology and restrict flexibility, which can lower dynamic efficiency. This is why politicians since the 1980s have reduced union power, for example through the 2016 ballot thresholds, and union membership has fallen from around 13 million in 1979 to about 6 million.

There are also alternative ways to tackle monopsony power. A national minimum wage has the same effect as the union wage in the diagram, raising pay and employment without the costs of industrial action, although a single rate cannot fit every market. Policies that make labour markets more competitive, such as improving geographical mobility, better information about jobs and limits on non-compete clauses, reduce monopsony power directly, so wages are pushed towards MRP by competition between employers rather than bargaining.

The effects also differ between stakeholders. Higher wages benefit workers and may raise demand, but firms' profits fall and consumers may face higher prices, especially if the employer passes on costs. In the public sector, where the government is the monopsonist, higher pay must be funded by taxes or cuts to other services.

In conclusion, where strong monopsony power already exists, union power is an effective second-best remedy that can raise both wages and employment, so such labour markets usually work better than monopsony alone. However, it is not the best possible arrangement: the outcome of bargaining is uncertain and can be costly, and depends on the balance of power and on whether the two sides cooperate. Labour markets probably work best when they are competitive, with monopsony power reduced through greater mobility and a minimum wage, leaving unions to focus on productivity, training and workers' voice.

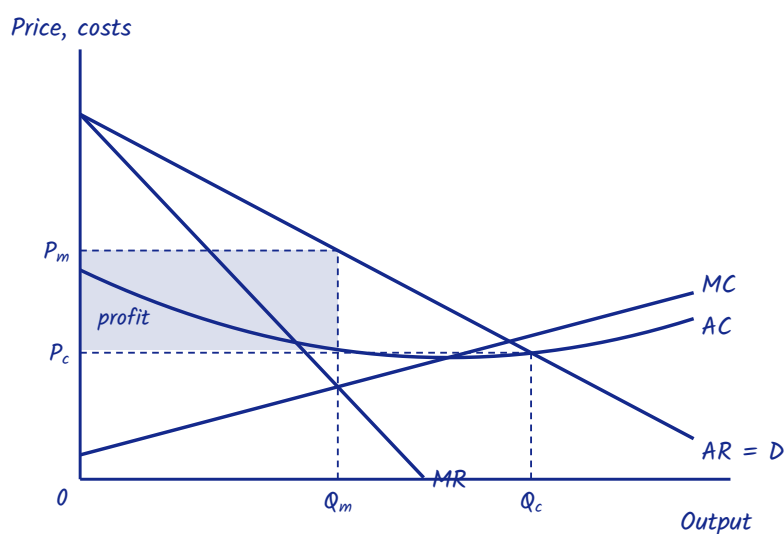
Do not write outside the box

Question
number

1 3

The performance of an industry can be judged by its prices and profits, its efficiency (productive, allocative, X- and dynamic efficiency) and the choice and quality available to consumers. A perfectly contestable market is one where firms can enter and exit freely and costlessly; there are no sunk costs, and entrants have the same technology and access to customers as incumbents. Contestability is a matter of degree and depends on barriers to entry and exit, especially sunk costs. Crucially, the number of firms does not matter: even a monopoly can be contestable.

In a contestable market, if incumbent firms make supernormal profit, new firms can engage in hit-and-run entry: they enter, undercut the incumbents, take the profit and leave before the incumbents can respond, without losing money because there are no sunk costs. The threat of entry alone is enough to change incumbents' behaviour.



As shown in the diagram, a firm in a market with high barriers would profit maximise at Q_m , where $MC = MR$, and charge P_m , making the shaded supernormal profit. In a contestable market this profit would attract hit-and-run entrants, so the incumbent instead sets a limit price at P_c , where $AR = AC$, producing Q_c and earning only normal profit. Price is lower and output higher, so consumer surplus is greater.

Contestability also improves efficiency. Price moves closer to marginal cost, so allocative efficiency improves. Incumbents must keep their costs as low as possible, because a rival with lower costs could enter and undercut them, so

Do not write outside the box

Question
number

X-inefficiency is removed and firms are pushed towards productive efficiency.

Because the number of firms does not matter, a contestable market can have a few large firms that fully exploit economies of scale, giving low average costs while still behaving competitively.

Budget airlines are a good example. Aircraft can be leased and moved between routes, so sunk costs on any one route are low. When a route becomes very profitable, airlines such as easyJet or Ryanair can enter, forcing incumbents to cut fares and costs. Similarly, the deregulation of bus services in 1986 increased contestability on many routes.

The effect on dynamic efficiency is mixed. With only normal profit in the long run, firms have less retained profit to fund research and development. However, the constant threat of entry gives incumbents an incentive to innovate to stay ahead and keep their costs below those of potential entrants.

In markets with low contestability, such as those with high sunk costs like rail track or water networks, legal barriers or strong brand loyalty, incumbents can earn supernormal profit in the long run, set prices well above marginal cost and allow costs to rise, so performance is worse. Incumbents may also use strategic behaviour, such as limit pricing, predatory pricing or heavy advertising that creates sunk costs for entrants, to reduce contestability.

Overall, the more contestable a market is, the closer its performance comes to that of perfect competition, with lower prices, normal profit and greater efficiency, whatever the number of firms in the industry.

1 4

Privatisation is the transfer of ownership of assets from the public sector to the private sector, for example BT in 1984, British Gas in 1986, the water companies in 1989, the railways in the mid-1990s and Royal Mail in 2013. Efficiency includes productive efficiency (lowest average cost), allocative efficiency ($P = MC$), X-efficiency and dynamic efficiency.

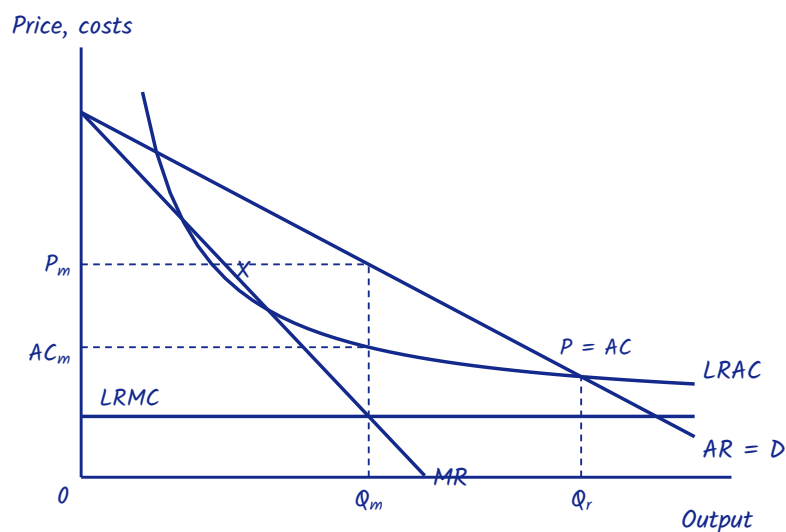
The main argument for privatisation is that the profit motive improves efficiency. State-owned industries have no shareholders demanding profits and can rely on government funding, so managers face little pressure to cut costs, leading to

Do not write outside the box

Question
number

X-inefficiency. Private firms must satisfy shareholders and face the threat of takeover or bankruptcy, so they have a strong incentive to reduce waste and lower costs, improving productive efficiency. Private firms can also raise money on capital markets for investment rather than competing for limited government funds, improving dynamic efficiency: telecoms after BT's privatisation saw rapid investment and innovation. Privatisation also removes political interference, such as keeping prices artificially low before elections.

Where privatisation is combined with deregulation and the removal of barriers to entry, the market becomes more contestable, and competition pushes prices towards marginal cost, improving allocative efficiency. Telephone and airline markets became far more competitive, and real prices fell. Privatisation also raised large sums for the government, reducing borrowing, although this is a benefit that has nothing to do with efficiency.



However, many privatised industries are natural monopolies, such as water supply, rail track and the national grid. As shown in the diagram, long-run average cost falls over the whole range of market demand, so one firm can supply the market at lower cost than several. Splitting the industry would mean each firm produces a small output at a point such as X, with much higher average cost. Privatising a natural monopoly simply transfers a monopoly from the state to the private sector: a profit-maximising firm produces Q_m , where $MR = MC$, and charges P_m , well above marginal cost and average cost, earning supernormal profit and causing allocative inefficiency.

Do not write outside the box

Question
number

This means privatised monopolies must be regulated, for example by Ofwat and Ofgem using RPI minus X price caps, or by setting price at P_r where $AR = AC$ so only normal profit is made. But regulation can fail. Regulators have less information about costs than the firms, and regulatory capture can occur. The water companies have paid large dividends and taken on huge debts, while underinvesting in pipes and reservoirs and discharging sewage into rivers: profit-seeking firms ignore externalities unless forced to consider them, and short-termism leads to poor long-term decisions.

The rail industry shows that privatisation can also reduce efficiency. Separating track from train operators and fragmenting the network into many franchises lost economies of scale and created costly coordination and contracts, and costs rose. Several franchises, including the East Coast main line and Northern, were taken back into public ownership after failing. Profit-driven firms may also cut unprofitable but socially valuable services, such as rural buses, ignoring positive externalities.

Moreover, improvements after privatisation may be due to new technology rather than ownership, as in telecoms, and well-run public firms with hard budget constraints can be efficient. Some industries, such as nuclear power, are of strategic importance and arguably should remain in state hands. The government also loses an ongoing source of revenue if a profitable firm is sold, and some assets, such as Royal Mail, were sold too cheaply.

In conclusion, privatisation is not always beneficial. It is most likely to improve efficiency when it is combined with competition and contestability, as in telecoms and airlines, because then the profit motive and rivalry together push down costs and prices. Where it creates a private natural monopoly, any gains in productive efficiency may be outweighed by allocative inefficiency, under-investment and neglected externalities, so the outcome depends on the quality of regulation. Whether privatisation is beneficial therefore depends on market structure, the strength of regulation and whether the benefits come from greater efficiency or simply from the revenue raised.

Do not write outside the box