



GCE A LEVEL

A520U20-1



ECONOMICS – A level component 2
Exploring Economic Behaviour

THURSDAY, 23 MAY 2019 – MORNING

2 hours 30 minutes

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ADDITIONAL MATERIALS

A calculator.
A WJEC pink 16-page answer booklet.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.
Answer **all** questions.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.
You are reminded of the necessity for good English and orderly presentation in your answers.

Answer all the questions.

1. Water Gets Competitive

The restructuring of the government-owned water industry in England and Wales in preparation for its privatisation in 1989 was unique. It took the form of the establishment of ten large, vertically-integrated regional companies each with monopoly power in the supply and treatment of fresh and waste water in geographical regions based on water catchment areas. These ten companies operated alongside several, smaller pre-existing water suppliers. Companies such as Thames Water, United Utilities and Welsh Water collect water, process it and then pipe it to homes and businesses. Water privatisation was controversial among certain members of the public. There were loud objections to the idea of the private sector taking over water supply and making profits from it. Some people's fears expressed at the time of privatisation have been well founded with water and sewerage bills in England and Wales rising by 40 per cent in real terms since 1990. Water poverty, which is said to exist when a household spends more than 3% of its income on water and sewerage charges, has increased in the last 30 years. Many households in water poverty are on benefits which only rise in line with inflation as measured by the Consumer Price Index (CPI).

Since privatisation there have been a number of mergers between water companies often involving small water suppliers being taken over by one of the big ten. The Competition and Markets Authority (CMA) and previous competition authorities have examined ten such mergers between water companies since 1990. In 2015 the CMA cleared the merger between South West Water and the much smaller Bournemouth Water further increasing the level of concentration in the water supply industry. Many of the big water companies are now totally or partially foreign owned.

Household customers pay for their water in one of two different ways. Either they have a water meter (similar to those they have for gas and electricity) or they pay a fixed charge for their water based upon the size of their home which means that their water bill is unrelated to their water consumption. Many analysts believe that all homes should have a water meter as it would prevent wasteful consumption of water. Charging for water by the use of a water meter would make it possible for each litre of water consumed to be priced equal to marginal cost although this would probably cause the water companies to make huge losses.

As water is supplied to households by regional monopolies, water prices are regulated by Ofwat. For the five-year period 2015 – 2020 Ofwat has said that the average water and sewerage bill, which in England and Wales was £396 in 2015, will be 5% lower by 2020. However, the water companies are then allowed each year to add inflation to household bills so water charges will still almost certainly rise. Price controls have been widely used by UK regulators in the energy and telecommunications sectors in the past and were even given support by Prime Minister Theresa May in the 2017 General Election campaign.

Average water prices in England and Wales by region

	2015	2020	Five Year Change
National average bill	£396		–5%
Anglian	£431	£390	
Dŵr Cymru (Welsh Water)	£440	£416	–5%
Northumbrian	£388	£382	–1.5%
Severn Trent	£333	£316	–5%
Southern	£437	£403	–8%
South West	£545	£506	–7%
Thames	£370	£353	–5%
United Utilities	£410	£398	–3%
Wessex	£485	£442	–9%
Yorkshire	£373	£361	–3%

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In April 2017 the water supply industry in England was opened up to competition for businesses but not for households. This meant that 1.2 million businesses, charities and public sector organisations in England were no longer restricted to buying water services from their regional monopoly. Instead, they could now shop around, renegotiate and find the right deal for them. The retail part of selling water i.e. billing, payments handling, meter reading and contract management will be competitive with business customers being able to choose from a number of different companies. These 'retail' companies will buy the water from the regional monopoly to sell on to their business customers. In effect this means that regional water companies will now be less vertically integrated; at least when dealing with their business customers.

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However, it is quite possible that a future Labour Government may consider re-nationalising the water companies even though they have made some capital investment which has benefits beyond the water industry. In their 2017 General Election manifesto the Labour Party pledged to re-nationalise the railways and the Royal Mail and to part re-nationalise Britain's energy industry. Most customers, households and businesses alike, just want a fair price and improved service from their supplier whoever it is.

- (a) Using the data, describe how an increase in the percentage of households in water poverty has occurred. [2]
- (b) Evaluate the effects of vertical and horizontal integration for a firm. [8]
- (c) Using the concept of marginal utility, discuss the extent to which replacing a fixed charge for water with water meters in a home will reduce water consumption. [8]
- (d) (i) Calculate the national average water bill in 2020. [1]
- (ii) Calculate the percentage change in the average Anglian water bill between 2015 and 2020. [1]
- (iii) In what circumstances will the average water bill fall in real terms between 2015 and 2020? [2]
- (e) Using a diagram, consider the extent to which a rise in variable costs for the water companies would affect price, output and profits. [8]
- (f) With reference to the water supply sector, evaluate the effects of privatisation on competition and efficiency. [10]

2. From dictatorship to the EU. The curious case of Albania

Albania was for many years one of the world's most mysterious countries located only a few miles from Italy, but similar in some ways to modern North Korea for its distrust of the outside world and strict communist principles. Occupied by both Italy and then Germany during the Second World War, Albania underwent a communist revolution in 1944 led by the eventual dictator Enver Hoxha. Over the next 40 years Albania was dominated by a state-run focus on heavy industry and a fear of foreign invasion which led to the construction of (according to some estimates) 750 000 defensive military bunkers (bomb-proof shelters) which are still dotted all over Albania.

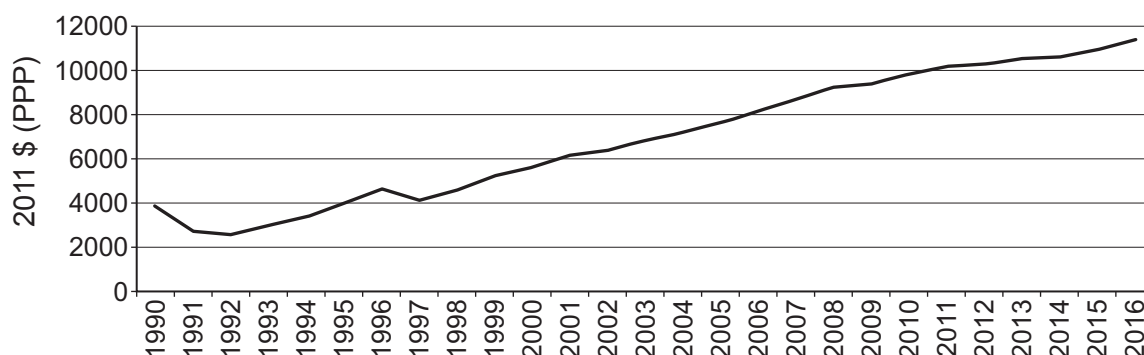


This defence programme was a massive drain on Albania's economy, with the programme diverting resources away from road construction and power projects that might have been better at supporting Albania's long run growth. The average bunker was said to cost as much as a two-room apartment or 20 bunkers cost as much as constructing a kilometre of road. The bunkers also occupied a lot of fertile agricultural land and around 100 people a year died building them.

Following the collapse of communism in the early 1990s, Albania adopted democracy in 1992 and began an ambitious programme of liberalisation. However, Albania had to build from a base in which 50% of the workforce were in state-controlled agriculture and another 25% in inefficient state-controlled heavy industry (such as mining and engineering) that had never had to compete either domestically or on world markets. Many of these state enterprises had ceased production in the early 1990s when communism collapsed. Albania also had to contend with a mass emigration of skilled workers in 1990 to Greece and Italy. The liberalisation programme involved exchange rate liberalisation, a commitment to avoiding budget deficits, controls on the money supply and a large-scale privatisation programme in housing, agriculture, transport and industry. After initial setbacks, Albania grew from the poorest country in Europe in the early 1990s to middle-income status today (**Source 1**).

Source 1

Albanian GNI per capita, Purchasing power parity (PPP), constant 2011 \$



Such has been Albania's progress, that in June 2014 Albania was accepted as an official candidate country for EU membership. Albania has been gradually becoming more economically integrated with the EU since 1992, with tariff-free access for Albanian goods granted in 2006, for example.

Formal talks on actual membership are likely to begin very soon and the prospect of these talks has sparked criticism in British newspapers, which have pointed to widespread corruption (Albania is 83rd/188 countries in the Transparency International Corruption Perceptions Survey, around the same level as Brazil and China), a large organised crime sector and the need for reform of the court system.

Supporters of future Albanian EU membership have argued that there have been significant improvements in all of these areas (with Albania's corruption perceptions rank having risen from 113th in 2012) in recent years. It is also argued that Albania's overall level of economic development is very similar to that of Croatia, which joined the EU in 2013, (**Source 2**) and that full EU membership will help Albania to make the jump to 'very high' levels of human development, as measured by the United Nations' Human Development Index (**Source 3**).

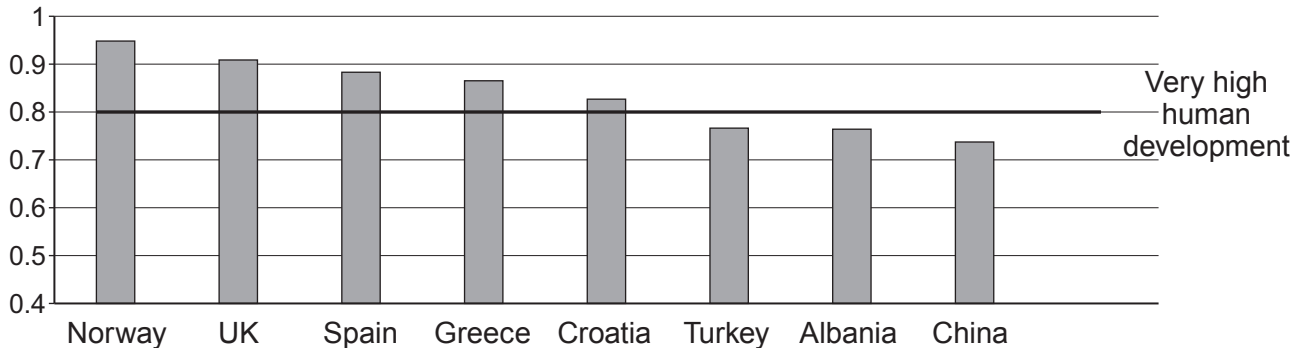
Source 2

Albania and Croatia, selected indicators (2016)

Indicator	Albania	Croatia
Life expectancy at birth	78	77.5
GNI/capita (PPP, 2011 \$)	11 379	20 750
Death rate of children under age of 5	1.4%	0.43%
Adult literacy rate	97%	99%
Women in senior management/legislative roles	22.5%	24.8%
Inequality (Gini coefficient, 0=total equality, 100=total inequality)	29	32.5
Internet users (% of population)	63%	70%
Access to clean water	84%	99.6%
Agriculture (%GDP)	23%	4.1%
Agriculture (% workforce)	41.8%	1.9%
Unemployment rate	14.3%	10.8%

Source 3

Human Development Index 2016, selected countries



Source 4

Estimated productivity and wage levels, selected countries

Country	Productivity index (Germany=100)	Hourly wage costs (euros)
Germany	100	22.4
UK	79	16.5
Bulgaria	65	4.4
Romania	70	5.5
Slovakia	65	10.4
Albania	55	3.5 (estimated)

According to Edi Rama, Albania's Prime Minister since 2013 (posting on Facebook):

50 *"Not only does the EU have ideals and values that we aspire to, but the aspiration to join the EU across the region has made the impossible possible. It is because of this aspiration that we have changed our long history of wars and bloody conflicts, and entered a new era of peace and cooperation. At present, we have only limited access to the EU's market in services, and no access for financial services; our banks cannot operate across Europe. We are outside the EU's customs union, meaning that we face costly red tape for exporting businesses. Tariffs apply to some fruit and vegetables. And we do not have access to the*

55 *EU's external trade deals. So when the EU lands a great trade deal, for example with South Korea, we do not benefit.*

60 *[EU membership also means that] we will have to adopt EU laws in a range of areas, including competition, intellectual, industrial and commercial property rights, government contracts, standards and certification, financial services, maritime transport, company law, accounting, consumer protection, data protection and health and safety at work. The list goes on. We are willing to accept these conditions because we believe that, in partnership with the EU, we can reform our country and in the process improve conditions for our citizens."*

- (a) Using the data and production possibility diagrams in each case, outline the opportunity cost of Albania's military bunker building programme:
- (i) in the short run [4]
 - (ii) in the long run [4]
- (b) (i) Outline the difference between GNI/GNP per capita and GDP per capita. [2]
- (ii) Using the data, explain the likely reasons for the trends in Albania's GNI per capita in **Source 1**:
- (I) Between 1990 and 1992 [4]
 - (II) From 1992 onwards [4]
- (c) With reference to **Sources 2** and **3**, discuss the extent to which it is reasonable to claim that *"Albania's overall level of economic development is very similar to that of Croatia"*. (lines 43-44) [10]
- (d) Using the information in the case study, discuss whether EU membership *"will help Albania to make the jump to 'very high' levels of human development"*. (lines 45-46) [12]

END OF PAPER

Surname	<i>StemUp Model Solution</i>
Answer booklet	Write the question number in the left-hand margin at the start of each answer.

Question
number

1 (a)

Water poverty rises when water bills grow faster than household incomes. Real water and sewerage bills have risen by 40% since 1990 (lines 10 to 11), but many households in water poverty are on benefits that only rise in line with CPI inflation (lines 13 to 14), so water takes a rising share of their income and more households pass the 3% threshold.

1 (b)

Horizontal integration is when a firm merges with or takes over a firm at the same stage of production in the same industry, such as South West Water taking over Bournemouth Water in 2015. Vertical integration is when a firm merges with a firm at a different stage of the supply chain, backwards towards suppliers or forwards towards customers, as with the regional water companies, which collect, treat and pipe water to homes.

Vertical integration lets a firm control quality and manage its supply chain, securing supplies of inputs and outlets for its product. It cuts out the middlemen, so the profit margin that a supplier or retailer would have taken is kept by the firm, lowering costs and raising profits. The firm can also restrict supply to rivals, creating a barrier to entry. Horizontal integration increases market share and market power, giving the firm more ability to set price. It also brings economies of scale, such as bulk buying of chemicals and energy, cheaper finance and spreading management and fixed costs over more output, so average costs fall and profits rise.

However, vertical integration assumes the firm has the expertise to run activities it is not familiar with, and co-ordinating the whole supply chain can be difficult. It also reduces flexibility, as the firm cannot easily switch to a cheaper outside supplier. Horizontal integration may lead to diseconomies of scale, as

communication and control become harder in a larger firm, and takeovers are often hampered by a clash of cultures. Both are costly, often involving a takeover premium, and take time before any benefits appear. Market power may also be limited by regulators: the CMA examined ten water mergers, and Ofwat's price controls stop water firms simply raising prices. Overall, the benefits depend on how well the integrated firm is managed and on regulation, so integration does not always raise profits.

1 (c)

Marginal utility is the extra satisfaction gained from consuming one more unit of a good. Under the law of diminishing marginal utility, each extra litre of water gives less satisfaction than the one before.

With a fixed charge based on the size of the home, the bill is unrelated to consumption (line 24), so the price of an extra litre is zero. A rational household will keep using water until marginal utility is zero, for example taking long showers, using a hosepipe or leaving taps running. With a meter, each litre has a price, as with gas and electricity. A rational consumer now only uses water up to the point where marginal utility equals price ($MU = P$), and maximises utility where MU/P is equal across all goods. Litres whose marginal utility is below the price are no longer worth buying, so wasteful, low-value uses are cut and water consumption falls, as analysts suggest (lines 25 to 26).

However, the fall may be small. Most water is used for drinking, cooking, washing and toilets, which have a very high marginal utility far above the price, so this consumption will not change; water is a necessity with no substitutes, so demand is price inelastic. If each litre is priced at marginal cost (lines 27 to 28), which is low for a network industry, the price per litre is tiny and only a little consumption with MU close to zero is cut. Consumers may not be fully rational: with habits and little information about how much water each activity uses, they may not respond. The effect also takes time, as meters must be installed and consumers need to see their bills, and many homes, including all new builds, already have meters, so the extra saving is limited.

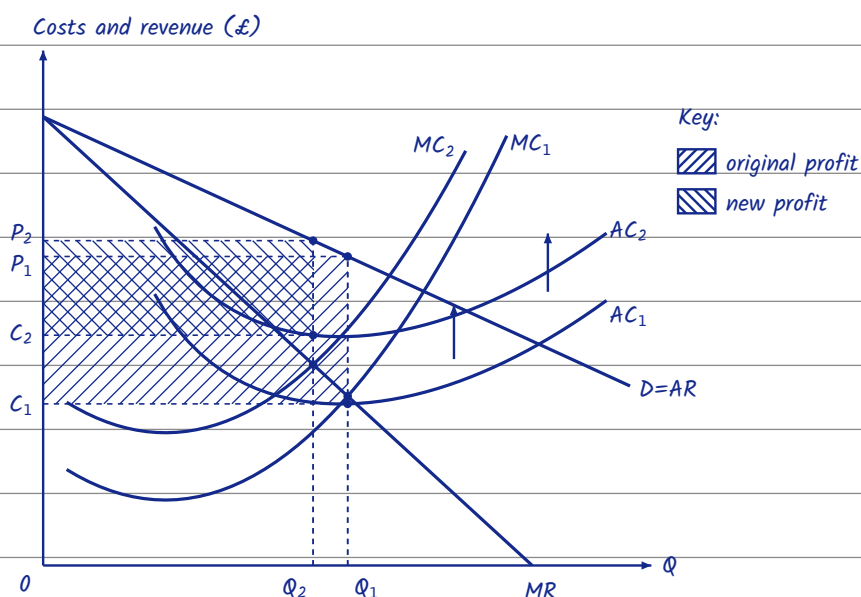
Overall, meters will reduce consumption, but only to a limited extent, mainly by cutting discretionary uses such as garden watering, and more so in the long run than the short run.

1 (d)(i) $5\% \text{ of } £396 = 0.05 \times £396 = £19.80. \text{ 2020 bill} = £396 - £19.80 = £376.20$

1 (d)(ii) $(£390 - £431) \div £431 \times 100 = -£41 \div £431 \times 100 = -9.51\%$

1 (d)(iii) The bill falls in real terms if the nominal bill rises by less than the rate of inflation (or falls). This will happen if the water companies comply with Ofwat's 5% cut, so that inflation can only be added each year after the 5% cut has been applied; bills then rise no faster than inflation from a lower base.

1 (e) Variable costs, such as energy for pumping, chemicals for treatment and wages, change with output and so are part of both marginal cost and average cost. Each water company is a regional monopoly, assumed to profit maximise where $MR = MC$. A rise in variable costs shifts MC up from MC_1 to MC_2 and AC up from AC_1 to AC_2 , while demand (AR) and MR are unchanged.



As the diagram shows, the profit maximising output falls from Q_1 to Q_2 (where

$MR = MC_2$) and price rises from P_1 to P_2 . Supernormal profit falls from $(P_1 - C_1) \times Q_1$ to $(P_2 - C_2) \times Q_2$, because only part of the cost increase can be passed on: the rise in price is smaller than the rise in average cost.

However, the extent depends on several factors. A small rise in variable costs will have little effect. Demand for water is very price inelastic, so most of the cost can be passed on with only a small fall in output. On the other hand, prices are regulated by Ofwat, which is cutting the average bill by 5% between 2015 and 2020, so firms may be unable to raise prices at all; output would then stay the same and the whole rise would be absorbed as lower profit. Dŵr Cymru (Welsh Water) is not for profit, so it does not profit maximise. Since 2017 competition from retailers for business customers, and the threat of new entrants in a more contestable market, may also stop prices rising, so firms may absorb the cost instead.

1 (f)

Privatisation is the transfer of ownership of a firm or industry from the public to the private sector, as with the water industry in 1989. It was meant to raise efficiency through the profit motive, but it created ten regional monopolies, so for households there is no competition at all: each household must buy from its regional supplier. Mergers have since increased concentration, with ten examined by the competition authorities since 1990 and the 2015 South West Water and Bournemouth Water merger cleared (lines 18 to 20).

Supporters argue that this is acceptable because water is a natural monopoly. The cost of the pipe network is a huge fixed cost, so long run average cost falls over the whole range of output and one firm can supply a region more cheaply than several competing networks. Competition has also been introduced where it is possible: since April 2017, 1.2 million businesses and organisations can choose their retail supplier for billing and meter reading. On efficiency, private firms have a profit motive to cut costs and improve productive efficiency, especially because Ofwat caps prices (a 5% cut in the average bill to 2020), so any cost savings below the cap are kept as profit. Privatised firms can also raise finance on

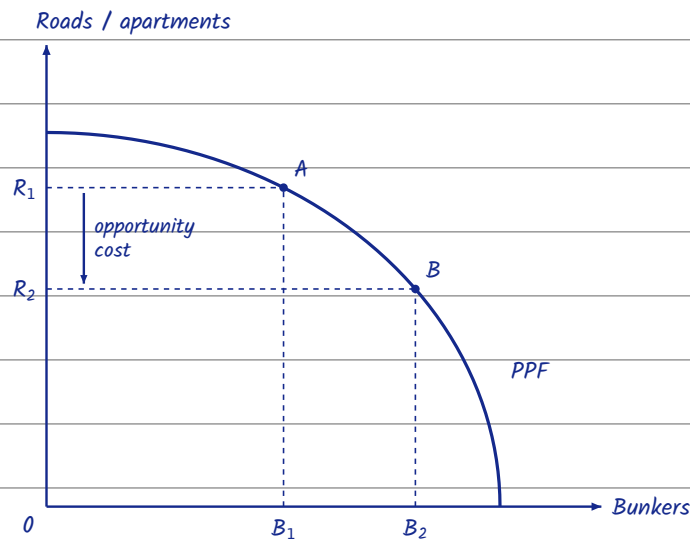
capital markets, and the large investment in water infrastructure gives dynamic efficiency and has boosted the construction and engineering sector (lines 47 to 48).

However, a monopoly sets price above marginal cost, so it is allocatively inefficient, and with no competitive pressure it may be productively and X-inefficient, a drag on productivity. The evidence suggests consumers have not gained: bills have risen by 40% in real terms since 1990 and water poverty has increased, while higher water prices raise costs for businesses and reduce their price competitiveness. The need for an industry regulator shows the sector was not really suited to privatisation, and there is a danger of regulatory capture, where Ofwat comes to serve the companies rather than consumers. Many companies are foreign owned (line 20), so profits flow abroad as dividends, worsening the primary income balance on the current account. Pricing at marginal cost would cause huge losses (line 28), which confirms that competitive outcomes are hard to achieve.

Overall, privatisation has done little for competition, as households still face regional monopolies, and its gains in productive and dynamic efficiency depend heavily on how strictly Ofwat regulates prices and investment. Given the 40% real rise in bills, its effects appear to have benefited shareholders more than consumers, although we cannot be sure how bills and investment would have changed under public ownership.

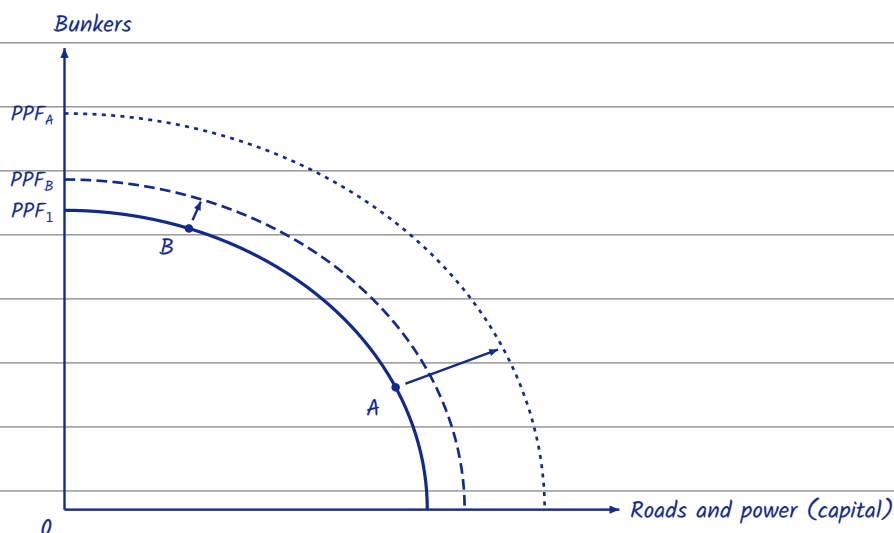
2 (a)(i)

Opportunity cost is the value of the next best alternative forgone. In the short run Albania's resources are fixed, so building more bunkers means a move along the PPF from A to B: bunkers rise from B_1 to B_2 but roads and apartments fall from R_1 to R_2 .



Each bunker cost as much as a two-room apartment and 20 bunkers cost as much as a kilometre of road (lines 17 to 18), so 750 000 bunkers meant giving up about 750 000 apartments or about 37 500 km of road ($750\,000 \div 20$), or power projects. Bunkers also used fertile agricultural land, so food output was lost, and around 100 workers a year died building them.

- 2 (a)(ii) In the long run the opportunity cost is lower economic growth. The bunkers diverted resources away from roads and power projects (line 16), which are capital goods that add to productive capacity, whereas bunkers do not. As the diagram shows, producing at B (many bunkers) rather than A (more capital goods) means the PPF only shifts out to PPF_B instead of PPF_A .



The loss of fertile agricultural land and the deaths of about 100 workers a year also reduced Albania's factors of production, so its productive potential was lower. This lost growth helps explain why Albania was the poorest country in Europe by the early 1990s.

2 (b)(i) GDP per capita is the value of output (income) produced by factors of production located within a country, divided by its population. GNI per capita adds net income from abroad: income earned by the country's own factors overseas minus income paid to foreign-owned factors, divided by population ($GNI = GDP + \text{net income from abroad}$).

2 (b)(ii) Source 1 shows GNI per capita fell from about \$3 900 in 1990 to about \$2 600 in 1992, a fall of about a third. When communism collapsed, many state enterprises ceased production (lines 25 to 26). With 75% of the workforce in inefficient state-controlled agriculture and heavy industry that had never had to compete, and no government funds to keep them going, firms shut down, so output fell and unemployment rose, reducing GNI. The mass emigration of skilled workers to Greece and Italy in 1990 also reduced GNI per capita: although the population fell, it was the most productive workers who left, so output fell by proportionately more than the population.

2 (b)(ii)

(11)

From about \$2 600 in 1992, GNI per capita rose steadily to about \$11 400 in 2016, more than four times higher, apart from a dip around 1997. Exchange rate liberalisation allowed the lek to fall, making exports more competitive and boosting net exports. Privatisation of housing, agriculture, transport and industry introduced the profit motive, improving efficiency on the supply side. Avoiding budget deficits kept interest rates low and prevented crowding out, encouraging private investment, while controlling the money supply kept inflation low, creating a stable environment for investment and FDI. Tariff-free access to the EU from 2006 raised export demand, remittances from the 1990 emigrants boosted incomes, and lower corruption (rank up from 113th to 83rd) improved confidence.

2 (c)

Economic development is the process by which a country improves the economic, political and social well-being of its people, so it is wider than income alone. There are some similarities. Source 2 shows life expectancy at birth of 78 in Albania and 77.5 in Croatia, and adult literacy of 97% against 99%, suggesting both countries have strong underlying health and education. Inequality is similar, with Albania's Gini coefficient of 29 actually lower than Croatia's 32.5, and women hold 22.5% of senior roles in Albania against 24.8% in Croatia. However, there are large differences in factors that matter for development. Croatia's GNI per capita (PPP) of \$20 750 is about 82% higher than Albania's \$11 379. Higher income gives households and governments more resources for housing, diet, healthcare and education. The under-5 death rate of 1.4% in Albania is more than three times Croatia's 0.43%, which suggests problems in the health system; Albania's high life expectancy may reflect diet and lifestyle rather than healthcare. Only 84% of Albanians have access to clean water compared with 99.6% in Croatia; clean water is a basic need, and its absence helps explain the high child mortality. Agriculture employs 41.8% of Albania's workforce and produces 23% of GDP, against 1.9% and 4.1% in Croatia, showing

a much less sophisticated economy with many people in low value-added, low productivity work and a relatively basic way of life. Internet use (63% against 70%) and higher unemployment (14.3% against 10.8%) point the same way. Source 3 confirms this: Croatia's HDI of about 0.83 is above the 0.8 boundary for 'very high' human development, while Albania's is about 0.76, below it and level with Turkey.

On the other hand, the gap in HDI is only about 0.07, much smaller than the gap between Croatia and Norway (about 0.95), and the 0.8 boundary is arbitrary. GNI per capita also adds less to well-being once it passes about \$10 000, which Albania has. Some of the similarities, such as inequality and the role of women, are not really measures of development, although they show that income is fairly well distributed. Unemployment is not a direct measure of development either, unless it persists in the long term.

Overall, the claim is only partly reasonable. The countries are similar on headline health and education outcomes, but differences in income, child mortality, access to clean water and the structure of the economy show that Albania is still a stage behind Croatia, as its position below the 'very high' HDI boundary shows.

2 (d)

The HDI combines life expectancy, education (mean and expected years of schooling) and GNI per capita (PPP). Source 3 shows Albania's HDI at about 0.76, so it needs to rise by about 0.04 to reach the 0.8 'very high' level.

EU membership could help in several ways. Edi Rama argues that the aspiration to join has brought peace and cooperation (line 50); a stable environment encourages investment and FDI, raising growth and GNI per capita. Full membership would end the costly red tape of being outside the customs union and remove tariffs on some fruit and vegetables (lines 53 to 54). This matters because agriculture is 23% of GDP and employs 41.8% of the workforce (Source 2), so farm incomes would rise for many of the poorest households. Albanian banks could operate across Europe and firms would benefit from EU trade deals such as the one with South Korea, giving larger export markets. With hourly wage

costs of only €3.5 against €10.4 in Slovakia and €22.4 in Germany (Source 4), Albania would be very attractive to EU firms looking for low-cost production.

Higher income raises the GNI part of the HDI directly, and higher tax revenue can fund better healthcare and education. EU structural funds could also pay for infrastructure such as clean water, which only 84% currently have, cutting child mortality and raising life expectancy. Adopting EU laws on health and safety, consumer protection and competition, and the reform of the courts needed to tackle corruption and organised crime, would mean the benefits of growth reach ordinary citizens rather than a corrupt elite.

However, there are reasons to doubt this. Albania's productivity index of 55 is the lowest in Source 4, below Bulgaria (65) and Romania (70), so many Albanian firms may not survive full competition in the single market, raising unemployment from an already high 14.3%. EU laws impose compliance costs on businesses and may raise labour costs, eroding the wage advantage. Free movement of labour could repeat the 1990 emigration of skilled workers, including doctors and teachers, harming health and education. If corruption (83rd out of 188) and organised crime persist, the gains may not be well spread, so higher GNI might not lead to better health and education outcomes.

Also, EU membership may not be necessary. Albania's GNI per capita has risen more than fourfold since 1992 and it already has tariff-free access for goods, so on current trends it may reach 0.8 with or without membership. Talks are only just beginning, so full membership is years away. Yet experience suggests it helps: Bulgaria and Romania grew rapidly after joining in 2007, with real improvements in development.

Overall, EU membership is likely to help Albania make the jump, mainly by raising GNI per capita and strengthening institutions, and it is hard to see how it would harm its chances. But it is neither necessary nor sufficient: the outcome depends on Albania tackling corruption, using growth to improve water and child health, and keeping its skilled workers, as well as on the time scale considered.