



GCE A LEVEL

A520U20-1



MONDAY, 22 MAY 2023 – AFTERNOON

ECONOMICS – A level component 2
Exploring Economic Behaviour

2 hours 30 minutes

A520U201
01

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.

Write your answers in the separate answer booklet provided.

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** questions.

1. The road goes ever on...

If you happened to find yourself travelling between Babylon and Susa in 668BC you'd pay a fee for using the road. Tolls to cross mountain passes were common in ancient Germany and also in India. In Britain, medieval road-keepers would charge what was known as 'pavage' for upkeep and maintenance.

- 5 After a change in legislation in 1700, more than 400 'Turnpike Trusts' were formed in Britain to maintain the road links so vital to the industrial revolution. These helped finance the creation of routes, such as Thomas Telford's A5 from London to Holyhead, which charged a toll every five miles or so.

- 10 In 2021 there were 23 toll roads in the UK, of which 18 are river crossings, including minor ones such as the tiny Swinford Toll Bridge across the Thames in Oxfordshire. The UK has also seen more major schemes such as the M6 Toll built around Birmingham and the introduction of congestion charges in cities such as London (2003) and Durham (2002).

- 15 As road congestion has worsened, road pricing/tolls have increasingly been seen as a solution. Rush hours are getting longer and slower; in 2019 transport consultant Inrix, published a report showing that in the previous year, the average British driver spent 178 hours stuck in traffic, costing each driver £1317 in lost work or leisure time, which annually loses the British economy £7.9 billion. Another study has predicted that the cost of congestion to the UK will hit £22bn by the year 2025, whilst a recent report by the Confederation of British Industry stated that 95% of businesses see congestion as a key concern (see **Figures 1 and 2**).
- 20

Figure 1

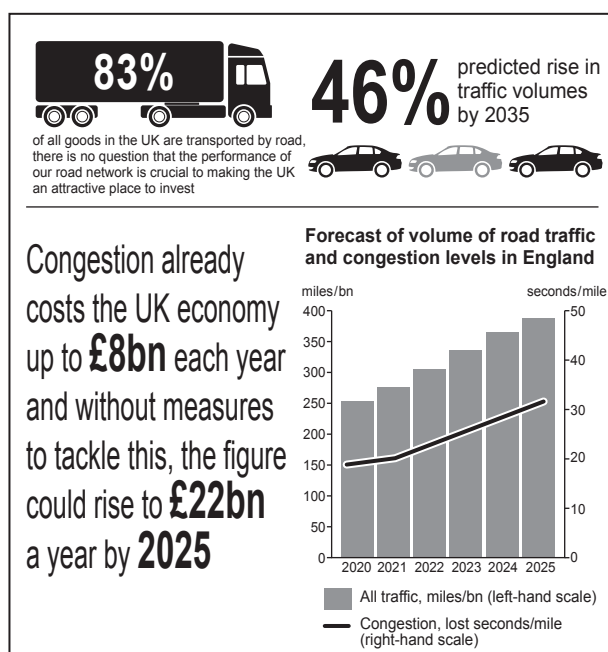


Figure 2

Rank	City / Large urban area	Peak hours spent in congestion per year	Percentage of total drive time in congestion	Total cost per driver per year	Total cost to the city per year
1	London	73	12.70%	£1911	£6.2bn
2	Manchester	39	9.90%	£1136	£233m
3	Aberdeen	35	12.30%	£1331	£138m
4	Birmingham	34	8.50%	£990	£407m
5	Edinburgh	31	9.80%	£1009	£225m
6	Guildford	29	8.60%	£812	£44m
7	Luton	29	10.70%	£964	£72m
8	Bournemouth	27	10.80%	£1019	£84m
9	Hull	27	9.40%	£970	£109m
10	Bristol	27	8.80%	£845	£154m

A few years ago, Alistair Darling, a former Chancellor, and the economist David Begg set their sights on developing a national road pricing scheme. Begg argued that rather than the current system in which roads are free at the point of use, a road pricing scheme would reduce traffic congestion by 20 to 30 per cent. Furthermore, the loss in fuel tax revenue to the Treasury as drivers switch to electric and hybrid cars strengthened their argument for the introduction of road pricing.

At heart, the Darling/Begg plan was pure free market economics. It proposed allocating scarce resources (uncongested road space) using the price mechanism. Car drivers would pay a price according to distance travelled and the level of traffic congestion, which would be related to the time of day or the day of the week (**Figure 3** shows the pricing structure for the M6 Toll).

Figure 3 (Prices correct January 2021)

		TOLL RATES	
		Motorbikes 	Cars 
Weekday	Day (7am–7pm)	£3.20	£6.70
	Off-peak (Morning) 5am–7am (Evening) 7pm–11pm	£3.10	£6.60
	Night (11pm–5am)	£2.10	£4.20
Weekend	Day (5am–11pm)	£3.10	£5.60
	Night (11pm–5am)	£2.10	£4.20

However, the Darling/Begg proposals would require complex computer hardware and software to monitor all UK traffic movements. These could only be developed by about 10 companies in the world, according to one expert who worked on the truck road pricing scheme in Germany. The effectiveness of a road pricing scheme will also depend on price elasticity of demand, which may vary geographically and at different times of the day.

Moreover, the history of such large computerisation schemes has not been a complete success in the UK; records at the Driver and Vehicle Licensing Agency (DVLA) are known to be flawed and Transport for London (TfL), which administers the London Congestion Charge zone, is still sending out penalty charge notices to drivers despite incontrovertible evidence that drivers had paid to use the roads. And while supporters of road pricing point out that mobile phones, fitness trackers and even credit cards monitor our movements, there is a general unease with the idea of satellites or cameras tracking our every journey.

Also, those in favour of road pricing do not have many answers to the almost inevitable rise in illegal, uninsured and unregistered cars, which would bypass a system policed by Automatic Number Plate Recognition (ANPR) cameras. There are also societal concerns about the effect of road pricing on older and poorer people, as well as the issue of 'rat runs' on local roads running past schools and houses to avoid congested (and expensive) motorways.

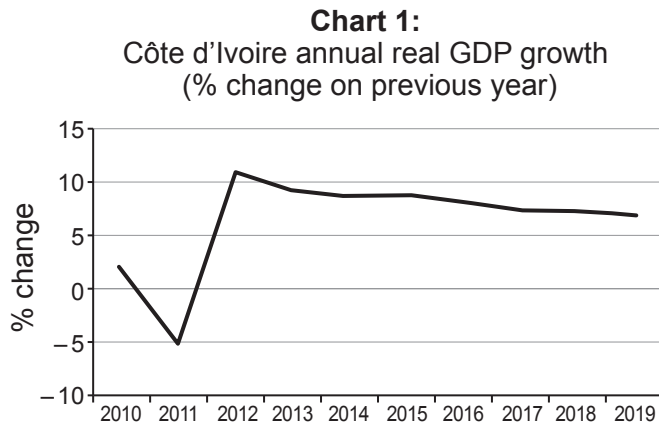
Another response to road congestion is increased road building. In the 2020 Budget, the then Chancellor Rishi Sunak announced a £27bn road building programme with plans to build 4000 miles of new road between 2020 and 2025. In 2021, many existing three-lane motorways in the UK were being extended to four lanes to use their hard shoulders (emergency breakdown lanes) to create so-called 'smart motorways'. This policy can help in some cases, but with a road network that is largely free at the point of use, there is a problem of supply creating its own demand. This takes us back to road pricing and the hope that the technology for once doesn't let the government down.

Source: <https://www.telegraph.co.uk/cars/comment/road-pricing-controversial-solution-congestion-pollution-wont/>

- (a) With the aid of a production possibility frontier (PPF) diagram, outline how road congestion damages the UK economy. [4]
- (b) Using a demand and supply diagram, show how roads being 'free at the point of use' (line 23) causes road congestion. [4]
- (c) Using examples from the data, explain how road congestion creates market failure. [5]
- (d) With reference to the data, explain how a road toll system could use price discrimination to reduce road congestion. [6]
- (e) With reference to the data, evaluate the use of road pricing as a means of solving the problem of road congestion in the UK. [10]
- (f) With the aid of an AD/AS diagram and with reference to the data, discuss how beneficial the £27bn road building programme is likely to be for the UK macroeconomy. [11]

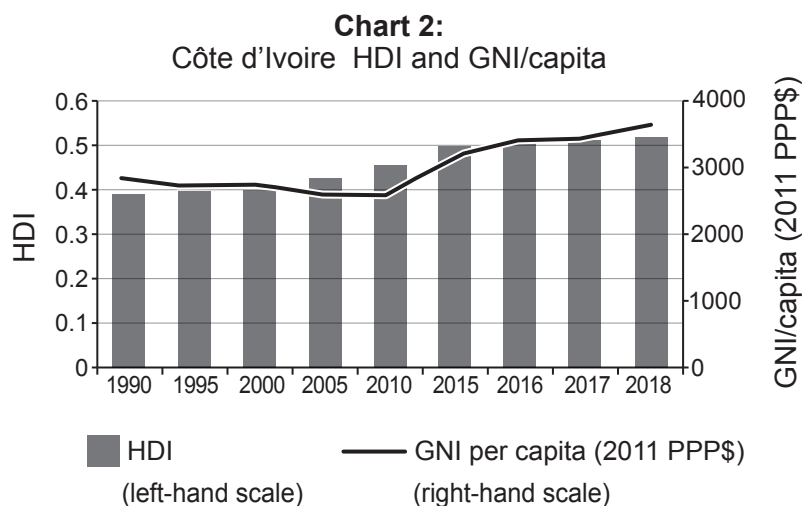
2. Out of Africa

In 2011, Côte d'Ivoire was shaken by its second civil war in a decade as forces led by the democratically-elected government clashed with forces loyal to the former president. The peace that followed, however, led to a decade of rapid economic growth, making Côte d'Ivoire one of the fastest growing economies in the world (**Chart 1**).



This growth has been sustained by economic liberalisation. Since 2011, the government, led by President Alassane Ouattara, has privatised state-owned companies and invested in roads and other infrastructure. The government's attempts to reduce business regulations (making it easier to start a business and get loans) have led to a rise in the World Bank's 'ease of doing business' index. The country has risen 25 places in the ranking to 110 out of 190 countries. At the same time, Côte d'Ivoire improved by 50 places in Transparency International's Corruption Perceptions Index. However, businesses were worried by uncertainty over the upcoming presidential elections.

The rapid economic growth, however, hasn't yet been fully reflected in economic development. In 2018, Côte d'Ivoire is ranked 170th of 189 countries in terms of the Human Development Index (HDI), with a score of only 0.516 (**Chart 2**). Part of the reason for this is low completion rates in secondary education. Only 35.5% of children finish school and the rate is much lower for girls than boys. High rates of deaths in childbirth, high infant mortality and a youth unemployment rate of 36% add to the problems facing the government.



Like many African economies, Côte d'Ivoire has plenty of natural resources; it is the world's largest exporter of cocoa and one of the world's largest cashew nut exporters (**Charts 3 and 4**). Around 40% of the population is involved in agriculture, which forms about 20% of GDP. Sustained economic growth will probably depend on making a significant transition away from agriculture towards manufacturing and services.

Chart 3:

Agricultural Production
(% change on previous year)

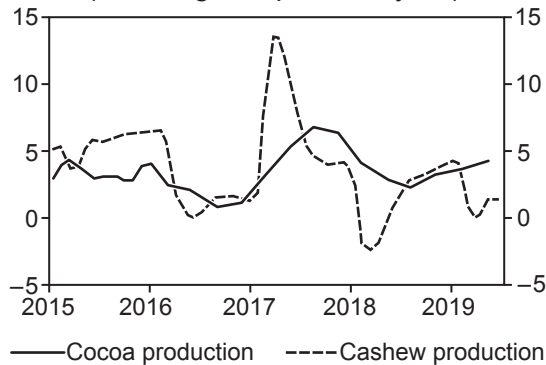
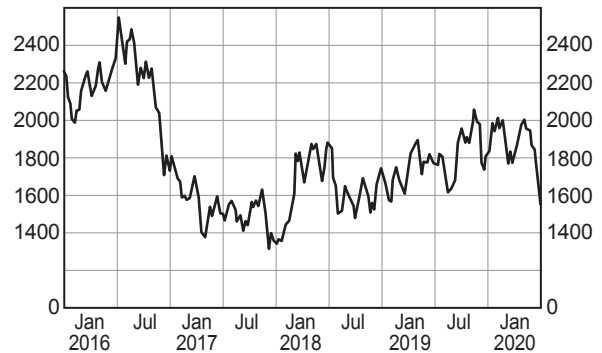


Chart 4:

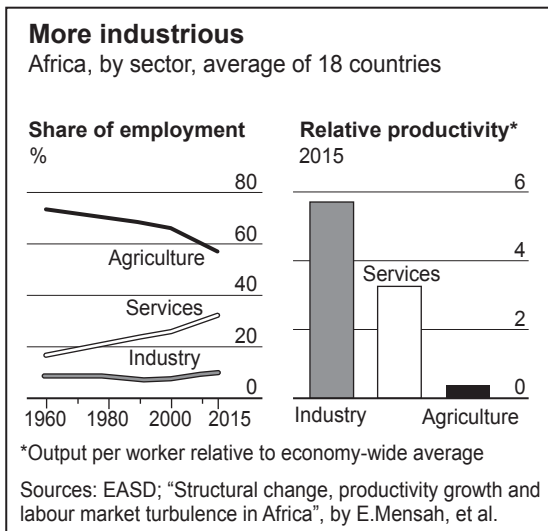
Cocoa prices (£/tonne)



Across Africa as a whole, there are signs that this transition is happening. Between 2000 and 2015 the proportion of Africans working on farms fell from 66% of the labour force in 2000 to 58% by 2015 (**Chart 5**).

Chart 5:

Agricultural employment and productivity



Many of the people leaving agriculture have found jobs in sectors like taxi driving or roadside carpentry. Although they are earning more than they did in agriculture, this change isn't the big shift towards high value-added manufacturing that will really drive growth.

There are some signs for optimism. As incomes have risen, the internal market in Africa has expanded. Manufactured goods represent 43% of African exports to other African economies. The problem is that manufactured goods are only 19% of what they export to the rest of the world. Given that the countries south of the Sahara have less combined purchasing power than Germany, Africa will remain poor unless exports to the rest of the world can be increased.

The big debate, therefore, is how to create the transition to these higher value-added sectors. In East Asia, some argue that the key to growth in countries such as South Korea and Singapore was an interventionist state, high investment and a focus on promoting exports.

By contrast, in Africa import substituting policies were tried initially, but these were abandoned by the 1980s as a result of a growing debt crisis. Factories closed as the International Monetary Fund (IMF) and the World Bank pressed governments to open their markets to foreign competition. Today, there are some signs of a return to import substitution. Tito Mboweni, South Africa's former finance minister, wanted to "set up manufacturing to make what we need and stop relying on imports from China". Uganda is trying to discourage imports. Ghana also says it is making import substitution a priority, but the concern is that the policies will work no better now than they did in the past.

So, could Africa follow the Asian model? There are doubts because although Africa has millions of poor people, both labour and capital costs are very high (**Table 1**), which means that the Asian labour intensive, export-oriented model is unlikely to work. However, some African economies are industrialising by adding value to the areas in which they have comparative advantage: agriculture and natural resources. In Kenya, for example, 400 tonnes of cut flowers are flown out of the capital, Nairobi, every day. In Ethiopia, roses are exported to the Netherlands. In Côte d'Ivoire, the World Bank is funding a project to improve the competitiveness of the cashew nut industry.

Table 1

	Labour cost per worker	Capital cost per worker	GDP per capita
Asia			
Bangladesh	\$835.31	\$1069.84	\$853.02
Africa			
Ethiopia	\$909.28	\$6137.98	\$471.19
Kenya	\$2118.01	\$9775.45	\$1116.69
Senegal	\$1561.64	\$2421.98	\$775.45
Tanzania	\$1776.65	\$5740.99	\$1094.95

Some analysts hope that success in these sectors might attract Foreign Direct Investment (FDI) and act as a gateway to developing a manufacturing sector. Early experiments, however, have not been encouraging. In Ethiopia, foreign investors into a newly built industrial park in Hawassa have struggled to find workers prepared to accept the wages and hours needed to stay competitive; 77% of workers quit within a year. In any case, rising automation in high income countries and tougher global competition are making the Asian low-wage export model increasingly difficult to copy.

Africa may therefore need to find its own route forward to break into world markets. But one based on adding value to its existing resource advantages might well be a part of the journey.

- (a) Using examples from the data, outline the difference between economic growth and economic development. [4]
- (b) The theory of comparative advantage suggests that countries should specialise to increase their levels of economic welfare. Construct your own numerical example to explain why this is so. [6]
- (c) If the trends in its economic growth continue, discuss whether Côte d'Ivoire is likely to see significant improvements in its HDI ranking. [10]
- (d) With reference to the data, discuss whether sustained economic growth for African economies will be more likely if there is a significant transition away from producing primary products towards manufacturing and services. [10]
- (e) With reference to the data, discuss which approach to industrialisation will be most likely to succeed in Africa. [10]

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Surname *StemUp Model Solution*

Answer booklet

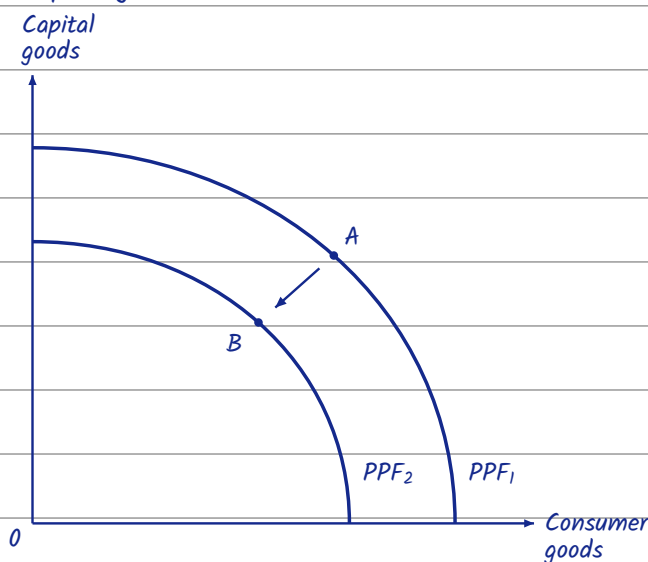
Write the question number in the left-hand margin at the start of each answer.

Question
number

1 (a)

A production possibility frontier (PPF) shows the maximum combinations of two goods an economy can produce when all its resources are fully and efficiently employed. Congestion wastes resources: in 2018 the average British driver spent 178 hours stuck in traffic, costing £1317 in lost work or leisure time and the economy £7.9 billion a year (lines 15 to 17), predicted to reach £22bn by 2025. With 83% of goods transported by road (Figure 1), lorries make fewer deliveries in a day.

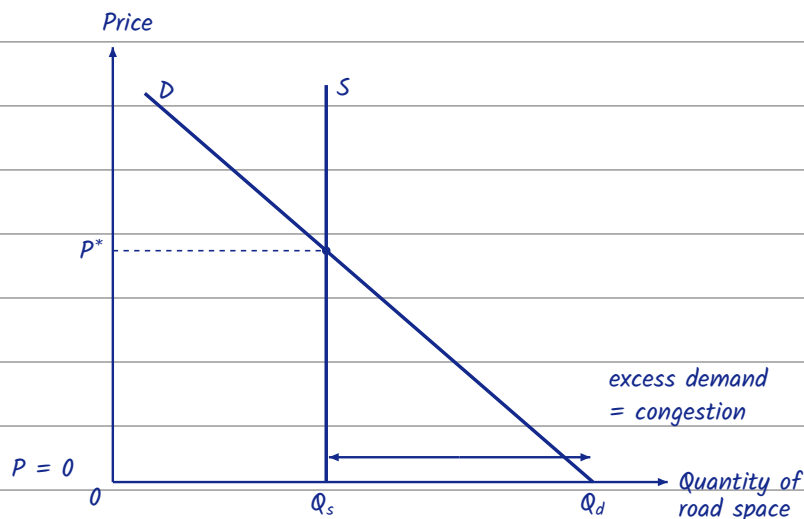
As the diagram shows, labour time and fuel are wasted, so the UK produces at B, inside PPF_1 , rather than at A (productive inefficiency). If congestion persists and deters investment (95% of businesses see it as a key concern, line 19), productive capacity falls and the PPF shifts inwards to PPF_2 .



1 (b)

In the short run the amount of road space is fixed, so supply is perfectly inelastic (S). Because roads are free at the point of use (line 23), the price is zero, so motorists demand Q_d , far more than the capacity Q_s .

As the diagram shows, at $P = 0$ there is excess demand of Q_s to Q_d . This is not rationed by price, so it is rationed by queuing instead: traffic jams and slower journeys, which is road congestion. Only a positive price of P^* would reduce quantity demanded to the capacity Q_s and clear the market.



1 (c)

Market failure occurs when the free market mechanism fails to produce an efficient allocation of resources, so output is not at the socially optimum level and welfare is lost.

Each driver joining a busy road considers only their private costs (fuel and their own time) but slows down every other road user, a negative externality.

Marginal social cost therefore exceeds marginal private cost, so road space is over-consumed relative to the social optimum where $MSC = MSB$, causing a welfare loss. These third-party costs are large: drivers lose 178 hours a year worth £1317 each (lines 15 to 16), and in London 73 peak hours a year are spent in congestion, costing each driver £1911 and the city £6.2bn (Figure 2).

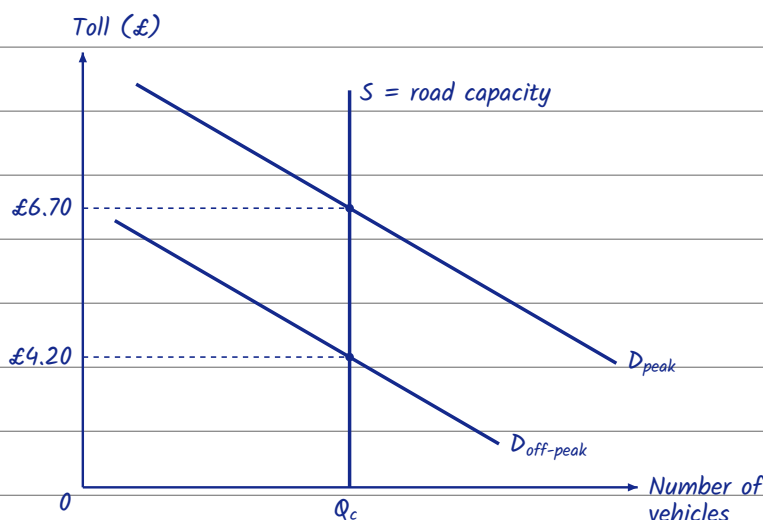
Time is a scarce resource that is misallocated to sitting in traffic rather than work or leisure. Since 83% of goods go by road, firms' costs rise as a delivery van may manage only 10 drops a day instead of 15, so the economy operates below its potential. Lost time is forecast to rise from about 20 to about 30 seconds per mile by 2025 (Figure 1). Idling traffic also emits more pollution,

imposing health costs on third parties.

1 (d)

Price discrimination means charging different consumers different prices for the same good or service. It requires that the seller can separate markets with different price elasticities of demand and prevent resale. A toll road can do this, as a journey can be separated by time of day, day of week and type of vehicle, and cannot be resold.

Figure 3 shows the M6 Toll charging cars £6.70 on weekdays from 7am to 7pm, £6.60 off-peak, £5.60 in the weekend day and only £4.20 at night (11pm to 5am), with motorbikes, which take up less road space, paying less than half (£3.20 in the weekday day). At peak times demand is high and relatively price inelastic, as commuters and businesses must travel then, so the toll is higher; at night demand is lower and more price elastic, so a lower toll attracts flexible users.



As the diagram shows, with fixed road capacity Q_c , the higher peak toll reduces the quantity demanded at peak to capacity, while the lower off-peak toll fills spare capacity. Drivers who are flexible, such as leisure trips or freight that can travel at night, switch to off-peak times, so demand is spread more evenly through the day and better matched to the available supply, cutting peak congestion. A national scheme charging by distance and congestion level by

time of day (lines 28 to 30) could reduce congestion by 20 to 30% (line 24).

The effect depends on the PED at peak times (lines 35 to 36): if peak demand is very inelastic, the toll must be high to cut congestion much.

1 (e)

Road pricing means charging motorists directly for using roads, for example according to distance travelled, time of day and level of congestion (lines 28 to 30). The problem is significant: congestion already costs the UK up to £8bn a year, possibly £22bn by 2025, and traffic volumes are forecast to rise by 46% by 2035 (Figure 1).

Road pricing introduces the price mechanism to road space, a scarce resource that is currently free at the point of use. Charging a price closer to the marginal social cost of a journey means drivers internalise the external cost they impose on others, so quantity demanded falls from the free market level towards the social optimum where $MSC = MSB$. Begg argued this would reduce congestion by 20 to 30% (line 24). Varying the price by time, as the M6 Toll does (£6.70 in the weekday day against £4.20 at night, Figure 3), spreads demand so existing road space is used more efficiently. It also raises revenue to replace the fuel duty the Treasury is losing as drivers switch to electric and hybrid cars (lines 24 to 26), which could be hypothecated to improve public transport, making demand for car travel more price elastic over time. Unlike road building, it does not suffer from supply creating its own demand (lines 55 to 56).

However, road pricing may not solve the problem. Its effectiveness depends on the price elasticity of demand, which varies geographically and by time of day (lines 35 to 36). Commuters with no realistic alternative have inelastic demand at peak times, so they pay the charge and congestion falls little, especially outside London where public transport is poorer. A national scheme needs complex hardware and software that only about 10 companies in the world could develop (lines 32 to 34), so set-up costs would be very high, and UK computer schemes have a poor record: DVLA records are flawed and TfL still sends

penalty notices to drivers who had paid (lines 37 to 41). Drivers may avoid the charge with illegal, uninsured and unregistered cars that bypass ANPR cameras (lines 44 to 46), or use rat runs past schools and houses, simply moving congestion and pollution onto local roads (lines 47 to 49). The charge is regressive, hitting older and poorer people hardest (lines 46 to 47), and it raises firms' transport costs, which may be passed on as higher prices since 83% of goods travel by road. There is also unease about satellites or cameras tracking every journey (line 43).

On balance, road pricing is the most direct way to tackle the root cause of congestion, the zero price, and the London congestion charge shows it can work in a busy city. However, it is unlikely to solve congestion fully on its own. Its success depends on the price being high enough at peak times, on alternatives such as public transport to make demand more elastic, and on reliable technology and enforcement. It is likely to be most effective if introduced gradually in the most congested cities first, such as London and Manchester (Figure 2), with the revenue used to improve public transport and to protect poorer drivers.

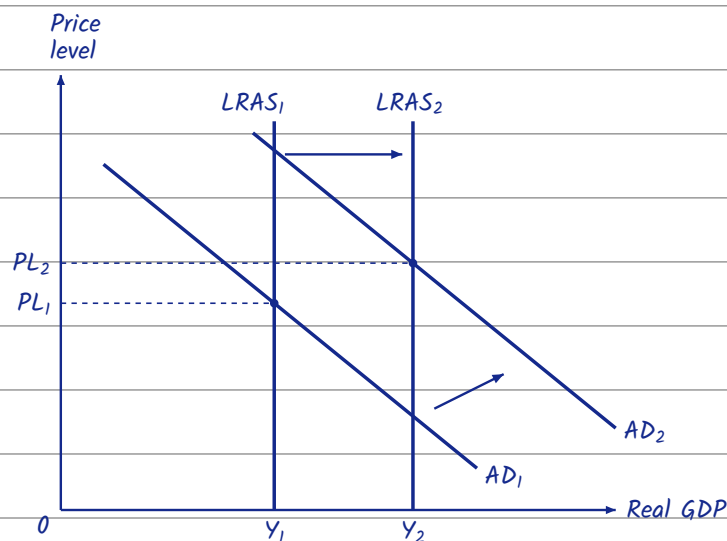
1 (f)

The £27bn programme plans 4000 miles of new road between 2020 and 2025, plus smart motorways (lines 50 to 54). Government spending is a component of aggregate demand ($AD = C + I + G + (X - M)$), and infrastructure also affects aggregate supply.

In the short run the spending raises G , shifting AD right from AD_1 to AD_2 .

Construction firms hire workers and buy materials, and these incomes are spent, creating further rounds of spending through the multiplier, so real GDP rises by more than the initial £27bn and unemployment falls. In the long run, extra road space reduces congestion, which costs up to £8bn a year and could reach £22bn by 2025 (Figure 1). As 83% of goods are transported by road, faster and more reliable journeys cut firms' costs and raise labour productivity, as fewer of the 178 hours a year per driver are wasted (line 16). This increases the

productive capacity of the economy, shifting LRAS right from $LRAS_1$ to $LRAS_2$.



As the diagram shows, real GDP rises from Y_1 to Y_2 , giving both actual and potential growth, with only a small rise in the price level from PL_1 to PL_2 .

Lower costs improve international competitiveness, helping the current account, and a better road network makes the UK "an attractive place to invest" (Figure 1), attracting FDI, which raises AD and LRAS further.

However, the benefits may be smaller than expected. With a network largely free at the point of use, supply creates its own demand (lines 55 to 56): new roads attract extra traffic, and with traffic forecast to rise by 46% by 2035, congestion may soon return, so the LRAS shift may be small and temporary.

Road projects have long time lags, so the AD effect comes first; if the economy is close to full capacity, or there is a shortage of construction workers and materials, the rise in AD mainly causes demand-pull inflation rather than higher output. The £27bn has an opportunity cost: spending it on rail, buses or broadband might raise productivity more and avoid the environmental costs of extra traffic. Financing it adds to government borrowing and debt interest, or needs higher taxes, which may crowd out private spending, and new roads bring higher maintenance costs in the long term. Smart motorways add capacity cheaply, but removing hard shoulders has raised safety concerns.

Overall, the programme is likely to benefit the UK macroeconomy in the short run through the multiplier and, if targeted at the worst bottlenecks, can raise productivity and long-run growth. However, the size of the benefit depends on how much spare capacity there is, the size of the multiplier and, crucially, whether new roads are combined with road pricing. Without pricing, induced demand means the extra capacity is soon congested again, so the long-run supply-side benefits may be limited.

2 (a)

Economic growth is an increase in real national output (real GDP or GNI) over time. Economic development is a broader, sustainable increase in living standards and welfare, including health and education, measured by indicators such as the HDI.

Côte d'Ivoire shows the difference. Real GDP grew by about 11% in 2012 and by 7 to 9% a year since (Chart 1), and GNI per capita rose from about \$2600 in 2010 to about \$3500 in 2018 (Chart 2). Yet development lags: it ranks only 170th of 189 on the HDI with 0.516, only 35.5% of children finish secondary school, fewer girls than boys, and infant and maternal mortality are high (lines 17 to 21). Between 1990 and 2010 the HDI rose from about 0.39 to 0.46 while GNI per capita fell, so development can even occur without growth.

2 (b)

The theory of comparative advantage states that a country should specialise in the goods it can produce at a lower opportunity cost than other countries and trade for goods in which it has a comparative disadvantage. Even if one country has an absolute advantage in both goods, specialisation and trade raise total output and consumption.

Suppose each country has the same resources, which could produce either:

Country	Cocoa (t)	Machines	OC of 1 cocoa	OC of 1 machine
Côte d'Ivoire	20	5	0.25 machines	4 cocoa
Germany	40	40	1 machine	1 cocoa

Germany has an absolute advantage in both goods. However, Côte d'Ivoire gives up only 0.25 machines for each tonne of cocoa, compared with 1 machine in Germany, so Côte d'Ivoire has a comparative advantage in cocoa, while Germany has a comparative advantage in machines (1 tonne of cocoa per machine against 4).

Without trade, if each splits its resources equally: Côte d'Ivoire makes 10 cocoa + 2.5 machines and Germany 20 cocoa + 20 machines, a total of 30 cocoa and 22.5 machines.

With specialisation, Côte d'Ivoire produces only cocoa (20) and Germany moves resources into machines, producing 12 cocoa + 28 machines. Total output is now 32 cocoa and 28 machines, so world output of both goods rises.

They trade at 1 cocoa = 0.5 machines, which lies between the two opportunity costs (0.25 and 1). Côte d'Ivoire exports 8 cocoa for 4 machines and consumes 12 cocoa + 4 machines, more than its 10 + 2.5 before trade. Germany consumes 20 cocoa + 24 machines instead of 20 + 20. Both consume beyond their own PPF, so economic welfare rises in both countries.

2 (c)

The Human Development Index (HDI) is a composite measure combining three dimensions: income (GNI per capita at PPP), health (life expectancy at birth) and education (mean and expected years of schooling). Côte d'Ivoire's HDI was 0.516 in 2018, ranked 170th of 189 (lines 17 to 18).

If growth of 7 to 9% a year continues (Chart 1), the HDI should rise. Income is one of the three components, so as long as real output grows faster than the population, the income index automatically improves: GNI per capita rose from about \$2600 in 2010 to about \$3500 in 2018, while the HDI rose from about 0.46 to 0.516 (Chart 2). Growth also widens the tax base, so the government can spend more on schools and hospitals, which could raise the 35.5% secondary completion rate and cut infant and maternal mortality (lines 19 to 20), improving the education and health components. Higher household incomes allow better diets, clean water and access to healthcare, and families

can keep children in school rather than working. A move away from rural agriculture may also give better access to these facilities. Better governance, with a rise of 50 places in the Corruption Perceptions Index (lines 13 to 14), makes it more likely that revenue reaches public services. As one of the fastest growing economies in the world, its HDI may rise faster than other low-ranked countries, so its ranking could improve.

However, a significant improvement in ranking is far from certain. The ranking is relative: if other countries' HDI also rises, Côte d'Ivoire may climb few places, and it was still 170th after a decade of rapid growth. Chart 2 shows the link between income and HDI is not strong: between 1990 and 2010 GNI per capita fell while the HDI rose. The benefits of growth may be unequally shared: about 40% of people work in agriculture, which produces only about 20% of GDP (lines 23 to 25), so rural incomes are low, youth unemployment is 36% and girls are much less likely to finish school, so growth may not reach those who most need better health and education. Many new jobs are low value-added, such as taxi driving (lines 30 to 32). Growth relies partly on cocoa and cashews, whose output and prices are volatile (cocoa fell from about £2500 to about £1300 a tonne between 2016 and 2018, Chart 4), although growth stayed at 7 to 8% through this, suggesting it is not purely resource-based. Political risk matters: businesses were worried by the presidential elections (lines 14 to 15), and if corruption returns, or conflict like 2011 when GDP fell by about 5%, gains could be reversed. Life expectancy and schooling also take many years to improve.

On balance, continued growth is likely to raise Côte d'Ivoire's HDI score, mainly through the income component, but a significant rise in its ranking is less likely in the short term. It depends on whether rising tax revenue is invested in education, especially for girls, and in healthcare, on political stability after the elections, and on how fast other low-HDI countries improve. Growth is necessary but not sufficient.

2 (d)

Primary products are raw materials and agricultural output such as cocoa and cashew nuts, whereas manufacturing (secondary) and services (tertiary) process goods and add value. Sustained growth is a long-run rise in real GDP and productive capacity without large fluctuations.

There are strong arguments that the transition is needed. Agriculture is the least productive sector: Chart 5 shows output per worker in agriculture far below the economy-wide average, while industry is about 5 times and services about 3 times the average. Moving labour from farms, where 58% of Africans worked in 2015 (line 29), into higher value-added sectors raises average productivity and so GDP. Primary dependency also makes growth unstable: cashew production swung from about 14% growth in 2017 to about -2% in 2018 (Chart 3), and cocoa prices fell from about £2500 to about £1300 a tonne between 2016 and 2018 (Chart 4). This volatility in incomes, export earnings and tax revenue makes long-term planning and investment by households, firms and government difficult. The Prebisch-Singer hypothesis suggests the prices of primary products fall relative to manufactured goods over time because their income elasticity of demand is low, so the terms of trade of primary exporters worsen, while demand for manufactures and services, with higher YED, grows faster as world incomes rise. Higher value-added sectors generate profits for investment in physical and human capital, raise the return to education so more children complete school, and once a base exists it attracts further investors who can find components and workers.

However, a transition does not guarantee sustained growth. Many people leaving agriculture have moved into low value-added jobs such as taxi driving and roadside carpentry (lines 30 to 32), which is not the shift that will drive growth. Manufactured goods are 43% of exports to other African economies but only 19% of exports to the rest of the world (lines 39 to 43), and sub-Saharan Africa has less purchasing power than Germany, so regional markets are too small. Breaking into world markets is hard as costs are high (capital per worker

costs \$9775 in Kenya against \$1070 in Bangladesh, Table 1), automation and global competition are rising (lines 73 to 75), and in Hawassa 77% of workers quit within a year (line 73). If manufacturing is dominated by footloose multinationals, profits flow abroad and firms may relocate as wages rise. Primary sectors can also sustain growth: well-managed commodity exporters, such as some Middle Eastern oil producers, have grown for decades, and commodity earnings, especially when prices are rising, can fund the transition. Adding value to existing comparative advantages, such as Kenya's 400 tonnes of cut flowers a day (lines 65 to 66), may be more realistic.

Overall, sustained growth is more likely with a transition towards manufacturing and services, because of their higher productivity and more stable, income elastic demand. However, the transition must be into genuinely high value-added, export-oriented activities rather than low-skill informal services, and it should build on existing strengths in agriculture and resources. Good governance, investment in skills and infrastructure, and the pace of change may matter as much as the industrial structure itself.

2 (e)

Industrialisation is the shift of resources into manufacturing. The data outline four approaches: export orientation (the East Asian model), import substitution (ISI), liberalisation, and adding value to existing comparative advantages.

Export orientation worked in South Korea and Singapore, where an interventionist state promoted high investment and exports (lines 50 to 52). Selling to large, high-income world markets allows economies of scale, earns foreign currency to buy capital goods and competition forces firms to be efficient. However, Africa's labour and capital costs are very high (Table 1): labour costs \$2118 per worker in Kenya against \$835 in Bangladesh, even though Kenya's GDP per capita is only \$1117, so a low-wage, labour-intensive model is unlikely to compete.

Automation and tougher competition make it harder to copy (lines 73 to 75), and at Hawassa 77% of workers quit within a year (line 73).

ISI protects infant industries with tariffs and quotas so that domestic producers

replace imports, as South Africa, Uganda and Ghana are again proposing (lines 56 to 59). Protection raises the domestic price, so domestic output expands and firms may in time gain economies of scale and compete. However, ISI goes against comparative advantage, protected firms lack competitive pressure and become inefficient, consumers pay higher prices and other countries may retaliate. ISI was abandoned in Africa by the 1980s after the debt crisis (lines 53 to 55), with concern it will work no better now (line 60).

Liberalisation, through privatisation, deregulation and free trade, improves incentives and efficiency. It seems to have worked in Côte d'Ivoire: after privatising state companies and cutting regulations it rose 25 places in the ease of doing business index (lines 9 to 12) with growth of 7 to 9% a year.

However, opening markets quickly closed factories in the past (lines 54 to 56), and success depends on the pace of change and transparent privatisation, so strong governance is needed.

Adding value to agriculture and natural resources builds on comparative advantage. Kenya flies out 400 tonnes of cut flowers a day, Ethiopia exports roses to the Netherlands and the World Bank is funding Côte d'Ivoire's cashew industry (lines 64 to 68). Processing local raw materials, such as cocoa into chocolate, raises value added and export earnings with lower costs, and success could attract FDI as a gateway to wider manufacturing (lines 69 to 70).

However, it leaves economies exposed to volatile primary output and prices (Charts 3 and 4).

Overall, adding value to existing comparative advantages, supported by liberalisation and good governance, is most likely to succeed, because it fits Africa's high-cost structure and builds on real strengths, whereas the low-wage export model and ISI face major obstacles. It depends on investment in infrastructure and skills and political stability, and Africa may need to find "its own route forward" (line 76).