Please check the examination details below before entering your candidate information

Candidate surname: StemUp Model Solution

Other names:

Pearson Edexcel Level 3 GCE

Centre Number:

Candidate Number:

Time 2 hours

Paper reference **9EC0/03**

Economics A

Advanced

PAPER 3: Microeconomics and Macroeconomics

You do not need any other materials.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- There are two sections in this question paper.
- In Section A, answer **all** questions 1(a) to 1(c) and **one** question from 1(d) or 1(e).
- In Section B, answer **all** questions 2(a) to 2(c) and **one** question from 2(d) or 2(e).
- Answer the questions in the spaces provided
  – *there may be more space than you need.*

Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Calculators may be used.

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.
- Good luck with your examination.

Turn over ▶

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SECTION A

Read extracts A and B before answering Question 1.

Answer ALL Questions 1(a) to 1(c), and EITHER Question 1(d) OR 1(e).

Write your answers in the spaces provided.

You are advised to spend 1 hour on this section.

Question 1

Hand car wash (HCW) firms in the UK

Extract A

What is the true human cost of your £5 hand car wash (HCW)?

The UK's hand car washes (HCWs) are extremely price competitive, but they have also been linked to modern slavery. Are they ever fair for workers?

There is little agreement about how many HCWs there are in the UK. Estimates range from 10 000 to 20 000. This lack of accurate information about the industry makes government regulation very difficult. Automated car washes, with their fierce rotating bristles, used to be the first option for drivers in a hurry. Now there is more choice. While the economy slows and incomes fail to keep up with inflation, demand for HCWs has grown. Many people see paying £5 for a car washed by someone else, rather than cleaning it at home, as a small expense which yields a high utility. But what is the true cost of a £5 car wash – and what should we be paying?

The growth of HCWs is partly the result of changes in the structure of industry in the UK. Many petrol stations have closed as drivers fill up at supermarkets. Garages and their forecourts have closed as cars become more reliable and locked into service agreements. The available sites for HCWs have therefore increased significantly and rents have fallen.

HCW entrepreneurs have identified available land and have benefitted from changes in the labour market, partly as a result of EU migration. UK drivers are now able to obtain cheap and effective hand car washing. For many migrants, car washes are a first job. "They accept car washing for a short period while they improve their language skills and move into other industries," says Ian Clark, a professor of work and employment at Nottingham Business School. "But there are also car-wash workers without networks who are in a dead end, working there for long periods."

Many drivers are only interested in getting the cheapest wash. If the price is very low, it probably means that workers are receiving less than the minimum wage and working in poor conditions. Crude calculations illustrate the problem. A £5 HCW employing five workers for 10 hours a day would need to wash 79 cars a day to just cover the wage costs. This assumes the workers are paid the minimum wage. This is one car every seven and a half minutes. Even if the profit can be higher on valet services, the price of which can be as little as £12 for a full inside-and-out clean, it's hard to see how a car wash price as low as £5 pays a living wage. This ignores all other costs which HCWs incur such as business rates and rent.

Evidence from car-wash workers is limited but Clark and others have been able to build a picture of some of the tougher conditions on drenched forecourts. "Like nail bars and small garment manufacturers, car washes are what we call 'hard-to-reach places,'" Clark

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explains. As part of the research, Clark and his team spoke to workers from 45 HCWs in the Midlands.

Clark and his team met and observed workers who lacked waterproof boots or trousers, or hi-vis jackets and gloves. "They're spraying around hydrochloric acid solution for alloy wheels, breathing in the vapour and fumes," Clark says. Some workers were paid a little over half the minimum wage.

(Source adapted from: https://www.theguardian.com/world/2018/jul/16/true-human-cost-5-pound-hand-car-wash-modern-slavery)

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Extract B

Government intervention in the HCW industry

There are three main areas of government intervention that might impact on labour intensive firms such as HCWs:

First, there is the planning issue which focuses on the impact on the environment, for example, the disposal and recycling of waste water and chemicals. There could be planning regulations to prevent the use of tarmac rather than concrete on forecourts. Tarmac allows waste water and chemicals to seep into the sub soil. It could also be a requirement to have a sludge trap to stop the waste entering waterways.

Second, there is the health and safety issue for workers. Prolonged exposure to chemicals and lack of protective clothing puts the health of workers at risk. Performance targets could involve minimum levels of protective clothing and rest breaks for the workers.

Third, there is the issue of tax. The informal nature of the business type makes tax evasion easier.

Not all UK HCWs violate regulations. There are legitimate, regulated HCW firms as well as examples of good practice by independent outlets. One national supermarket, Tesco, has banned all independent hand car washes from its car parks. It is now in a partnership agreement with national car wash operator Waves. It uses a WashMark certificate of quality and compliance which was introduced by the industry to improve working conditions. Other major supermarkets are considering similar changes. One adviser believes £9 is a reasonable minimum price for a basic wash. Some pressure groups have developed a mobile phone app where evidence of unreasonable conditions can be reported by drivers.

Involving drivers in the issue, and making them demand fairer car washes, creates an incentive for good businesses to improve practices and come forward to get a WashMark certificate.

(Source adapted from: https://www.parliament.uk/documents/commons-committees/environmental-audit/Hand-Car-Wash-evidence.pdf research into HCWs by Professor Ian Clark, Nottingham Business School May 2018)

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1 (a) Using the information provided, explain the market structure that best describes the hand car wash (HCW) industry in the UK.

(5)

(b) Examine **two** reasons why the demand for HCWs increases during a period when consumer 'incomes fail to keep up with inflation' (Extract A line 8).

(8)

(c) Discuss the likely effects of changes in the level of migration on firms such as HCWs in the UK. Use a labour market diagram and the information provided to support your answer.

(12)

EITHER

(d) Evaluate the microeconomic and macroeconomic factors which determine the number of firms in an industry. Refer to HCWs or another industry of your choice.

(25)

OR

(e) Evaluate the microeconomic and macroeconomic effects of increased government intervention in an industry. Refer to HCWs or another industry of your choice.

(25)

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(a) Using the information provided, explain the market structure that best describes the hand car wash (HCW) industry in the UK.

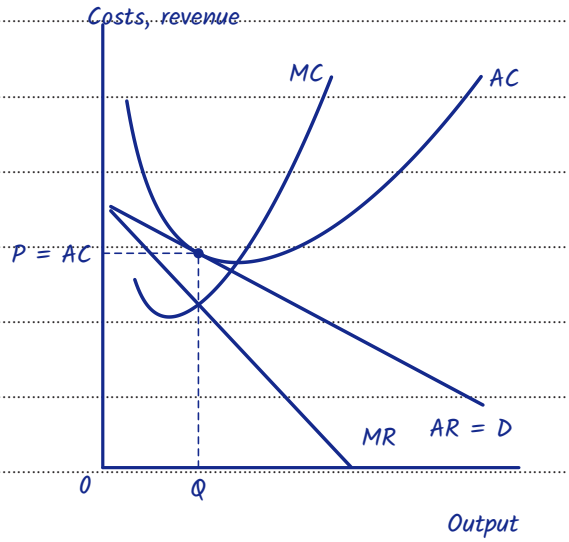
(5)

The HCW industry is best described as monopolistic competition.

There are many small sellers: estimates range from 10 000 to 20 000 HCWs in the UK, so each firm has a tiny market share and very low price-setting power, which is why so many charge the same £5 for a basic wash.

Barriers to entry and exit are low. Little capital is needed beyond pressure washers and chemicals, cheap sites are available because petrol stations and garages have closed and rents have fallen, and cheap low-skilled labour, often migrants for whom it is a first job, is easy to hire.

The service is slightly differentiated: some firms offer valet services or a full inside-and-out clean for as little as £12, and firms differ by location, speed and quality.



Because entry is easy, any supernormal profit attracts new firms, so in the long run each firm earns only normal profit where AR is tangent to AC, as in the diagram. This fits the very low margins in Extract A: a £5 HCW with five workers must wash 79 cars a day just to cover wage costs.

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(b) Examine **two** reasons why the demand for HCWs increases during a period when consumer 'incomes fail to keep up with inflation' (Extract A line 8).

(8)

Real income falls when 'incomes fail to keep up with inflation', as the purchasing power of consumers' money incomes falls.

First, HCWs may be an inferior good, with a negative income elasticity of demand. As real incomes fall, consumers trade down from more expensive alternatives, such as dealership valeting or buying a newer car, to a cheaper £5 wash, so the demand curve for HCWs shifts to the right, from D1 to D2, raising the quantity of washes bought at each price. Because a £5 wash is a very small percentage of consumer income, many drivers see it as a basic or essential purchase that yields a high utility for a small expense (Extract A), so they keep buying it even when budgets are squeezed. People who cannot afford a new car keep older cars for longer and are more likely to pay for a cheap wash to maintain them.

Second, demand depends on factors other than income, especially the availability and price of substitutes. Many petrol stations have closed as drivers fill up at supermarkets, so there are fewer automated car washes, the main substitute, which used to be the first option for drivers in a hurry. At the same time the number of available sites for HCWs has increased significantly and rents have fallen, so HCWs are more convenient and accessible. When real incomes fall, households also work longer hours or take second jobs to maintain their living standards, so the opportunity cost of their time rises and paying someone else to wash the car becomes more attractive than cleaning it at home.

However, it is not clear that it is rational to buy an HCW when incomes fall: washing the car at home is cheaper still, so a cut in real income could reduce demand. The growth in demand may instead be explained by the rise in supply and very low prices. Incomes have not been falling over the whole period, so demand may have grown as incomes rose, with HCWs having a low positive YED because they take up such a small share of income. The effect will also vary between regions and demographic groups, as real incomes have fallen

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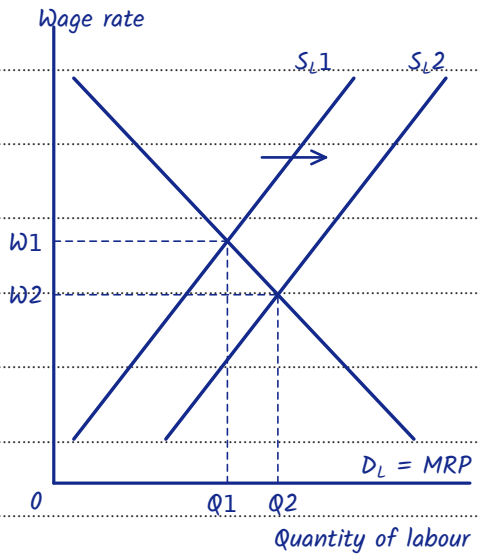
more for some households than others, and the evidence about the industry is very limited.

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(c) Discuss the likely effects of changes in the level of migration on firms such as HCWs in the UK. Use a labour market diagram and the information provided to support your answer.

(12)

Migration is the movement of people into (immigration) or out of (emigration) a country. HCWs are labour-intensive firms, and migrants are their main employees: for many migrants, car washes are a first job while they improve their language skills (Extract A).



An increase in immigration, for example from the EU, increases the supply of labour to low-skilled jobs. As the diagram shows, the supply of labour shifts right from S_L1 to S_L2, so the wage rate falls from W1 to W2 and employment rises from Q1 to Q2. Wages are the main cost of an HCW, so lower wages reduce costs, allowing firms to charge only £5 and still make a profit. Low wages and cheap sites lower barriers to entry, so more firms enter the industry, which is why there are now 10 000 to 20 000 HCWs. Firms can also stay open for longer hours and expand into valeting.

If there is a national minimum wage set above the market wage, the extra migrants increase the excess supply of labour at the wage floor. Workers without networks may then accept jobs in the informal economy for less than the minimum wage: some were paid a little over half the minimum wage and lacked protective clothing. Firms with monopsony power can exploit such workers, paying wages below their marginal revenue product. Higher immigration also increases the UK population and so increases demand for car washes, shifting the demand for labour to the right as well.

A decrease in migration, for example since the UK left the EU, shifts the supply of labour to the left, raising wages. Costs rise, so some HCWs would have to raise prices towards the £9 that one adviser believes is reasonable, while less efficient firms leave the industry.

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Firms may substitute capital for labour by installing automated car washes. Similar effects would be felt in other industries that rely on migrant labour, such as hospitality, construction, agriculture and social care.

However, the impact depends on the size of the change in migration and on the elasticity of supply of labour. Migrants often move into other industries once their language improves, so the effect on HCWs may be temporary, and the speed at which they move determines how much labour supply really changes. Leaving the EU and the global health crisis may make net migration negative, improving wages and conditions. The degree of monopsony power matters: in a competitive labour market wages cannot be held far below MRP. There is not enough evidence of exploitation, as HCWs are hard-to-reach places and Clark's team spoke to only 45 HCWs in the Midlands, and some firms, such as Waves with its WashMark certificate, pay fair wages. Finally, sub-markets differ: luxury valeting and mobile operators need more skilled workers, so they are less affected by changes in the supply of low-skilled migrant labour.

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EITHER

(d) Evaluate the microeconomic and macroeconomic factors which determine the number of firms in an industry. Refer to HCWs or another industry of your choice.

(25)

OR

(e) Evaluate the microeconomic and macroeconomic effects of increased government intervention in an industry. Refer to HCWs or another industry of your choice.

(25)

Indicate which question you are answering by marking a cross in the box ☒. If you change your mind, put a line through the box ☒ and then indicate your new question with a cross ☒.

Chosen question number: **Question 1(d)** ☒ **Question 1(e)** ☒

Write your answer here:

Question 1(d)

The number of firms in an industry is determined by how attractive it is to enter, how easy it is to enter and leave, and how many firms the market can support at the minimum efficient scale. These depend on both microeconomic and macroeconomic factors.

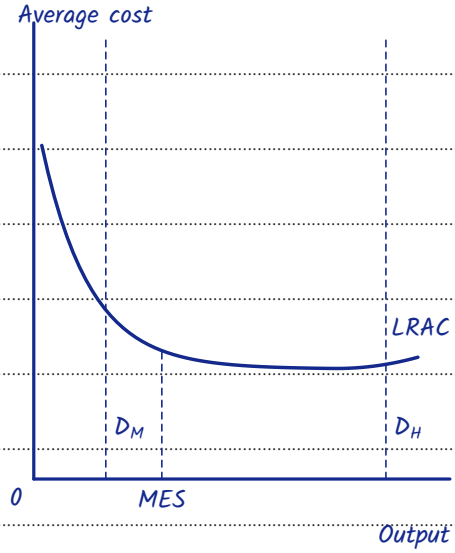
The key microeconomic factor is barriers to entry and exit. HCWs need little capital and have low sunk costs, and the closure of petrol stations and garages means available sites have increased significantly and rents have fallen. Cheap labour, partly from EU migration, also keeps costs low. Because barriers are low, the market is highly contestable: supernormal profits attract entrants until only normal profit is made, so there are an estimated 10 000 to 20 000 HCWs. In contrast, in industries such as car manufacturing, sunk costs, brand loyalty and patents are high barriers, so there are few firms.

Economies of scale are a second factor. As the diagram shows, the minimum efficient scale (MES) is the lowest output at which LRAC is minimised. If market demand D_H is many times the MES, as in hand car washing, where a firm reaches MES with a few workers, many firms can survive. If demand D_M is below the MES, as in a natural monopoly such as water supply or rail track, only one firm can produce efficiently.

Demand factors also matter. A growing market supports more firms: demand for HCWs

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has grown because of changing tastes, with drivers preferring a hand wash to fierce rotating bristles, and because the main substitute, automated washes at petrol stations, has declined. Demand that is high relative to costs creates supernormal profit, the signal for entry.



The behaviour of existing firms and the government also matters. Oligopolists may use limit pricing, predatory pricing or mergers and takeovers to reduce the number of firms, as when supermarkets such as Tesco banned independent HCWs from their car parks and partnered with one national operator, Waves. Regulation raises costs and so reduces the number of firms, for example planning rules requiring concrete forecourts and sludge traps, whereas deregulation and privatisation, such as opening UK energy supply to competition, can increase the number of firms. Nationalisation can reduce an industry to a single firm.

Macroeconomic factors are also important. Economic growth raises incomes and demand, so more firms enter, while a recession causes firms to exit. However, unemployment and rising relative poverty can increase the number of HCWs: falling real incomes increase demand for a cheap £5 wash, and the unemployed may set up small businesses. High inflation raises costs, and firms in competitive markets that cannot raise prices make losses and exit. Exchange rates affect industries that trade: an appreciation makes imported inputs cheaper but exports dearer, so exporters may leave the market. The level of protectionism matters: tariffs protect domestic firms from foreign competition, so free trade usually reduces the number of domestic producers but increases the number of firms selling in the market. Supply-side policies, such as lower corporation tax and start-up grants, encourage new firms, and inward FDI by TNCs adds firms but may drive out

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smaller local rivals. Environmental protection adds to costs and may reduce the number of firms.

However, the importance of each factor depends on the nature of the industry. For a labour-intensive industry like HCWs with a small MES, microeconomic factors such as low barriers to entry and the availability of cheap labour and sites dominate. For a capital-intensive industry such as steel or car manufacturing, the MES is a large share of the market, so economies of scale and macroeconomic factors such as exchange rates and world demand are more significant.

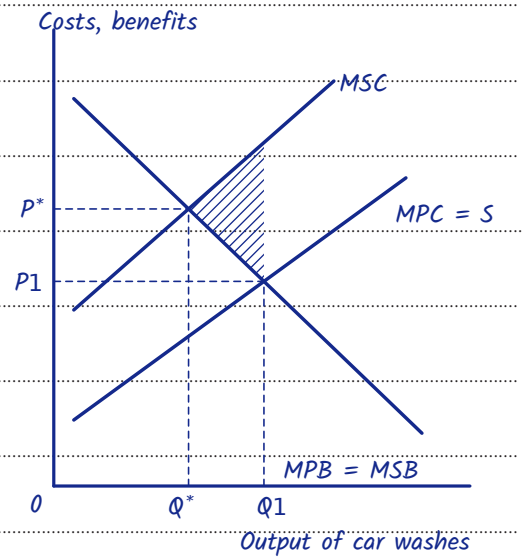
The factors also change over time. New technology, such as cheaper automated or waterless washing, could raise the MES and reduce the number of HCWs. Exchange rates go up and down, so their effect can quickly reverse. If migration falls after the UK left the EU, labour costs will rise and some HCWs will exit. Stricter environmental protection might not reduce the number of firms at all if consumers prefer a more ethical service, as the WashMark scheme suggests.

Finally, the data are unreliable: estimates of 10 000 to 20 000 show that the government does not even know how many HCWs exist. Overall, barriers to entry and the MES relative to market size are the most important determinants, but the macroeconomic environment decides whether entry is profitable, so the number of firms is the result of both.

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Question 1(e)

Government intervention is action by the state to change market outcomes, for example through regulation, taxation, minimum wages, or enforcement of existing laws. In the HCW industry Extract B identifies three areas: planning and environmental rules, health and safety, and tax.



At a microeconomic level, regulation raises firms' costs. Requiring concrete rather than tarmac forecourts and sludge traps, providing protective clothing and rest breaks, and enforcing the minimum wage all increase the cost of each wash, shifting supply to the left. The price rises, perhaps towards the £9 one adviser recommends, and output falls, so consumer surplus falls. The incidence depends on price elasticity of demand: demand for HCWs is fairly price elastic because drivers can wash cars at home or use automated washes, so firms cannot pass on much of the cost and profits fall. Some firms will leave the industry, so the market becomes more concentrated, which benefits legitimate operators such as Waves.

Intervention can correct market failure. The disposal of waste water and chemicals into the sub soil and waterways is a negative externality. In the diagram, firms produce at Q1 where MPC = MPB, but the socially optimal output is Q^* where MSC = MSB. Regulation or a tax that makes firms pay the external cost shifts MPC up to MSC, reducing output to Q^*, raising price to P^* and removing the hatched welfare loss, so allocative efficiency improves.

In the labour market, enforcing the minimum wage raises wages for workers who keep their jobs, some of whom were paid a little over half the minimum wage. However, higher wages reduce the quantity of labour demanded, because demand for labour depends on

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marginal revenue product, so some workers may lose their jobs, and firms may substitute capital, such as automated washes, for labour. Better health and safety may improve productivity and reduce labour turnover and days lost to illness.

At a macroeconomic level, enforcing tax rules reduces tax evasion in the informal economy, raising government revenue and improving the budget balance, which can fund public services. Higher wages for the lowest paid reduce poverty and income inequality, shown by a fall in the Gini coefficient and a Lorenz curve closer to the line of equality. Higher prices add slightly to inflation, but because HCWs are a small part of the CPI basket the effect will be very small. Less pollution improves environmental standards and long-run sustainable growth. On the other hand, regulation reduces flexibility, which may reduce investment and FDI and slow economic growth, and higher costs may increase unemployment.

However, intervention may lead to government failure. There is a severe lack of information: estimates of the number of HCWs range from 10 000 to 20 000, so asymmetric information makes regulation very difficult. Enforcement is costly, and because the businesses are informal, some may simply go further underground, so workers are no better off. Regulatory capture is also possible if large operators influence the rules to keep out smaller rivals.

The effects depend on elasticities. If demand for labour is elastic, because labour can easily be replaced with capital, job losses will be large. If demand for car washes is price elastic, output will fall sharply and some firms will go out of business, causing loss of jobs and other economic activity. If demand is inelastic, consumers bear the cost. Consumers' own wages may also be rising, making higher prices affordable.

Other events matter too. Leaving the EU and the high unemployment from the global health crisis will change labour supply and demand regardless of intervention. Industry self-regulation may be more effective: the WashMark certificate, the Tesco partnership

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with Waves and the app that lets drivers report poor conditions create an incentive for good businesses to improve practices at no cost to the taxpayer.

In conclusion, increased intervention is likely to raise prices, reduce the number of firms and possibly employment in the short run, but it corrects serious market failures, protects workers and raises tax revenue. Its success depends on effective enforcement, so a combination of government regulation and industry schemes such as WashMark is likely to be best.

(Total for Question 1 = 50 marks)

TOTAL FOR SECTION A = 50 MARKS

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SECTION B

Read Figures 1 to 4 and extracts C and D before answering Question 2.

Answer ALL Questions 2(a) to 2(c), and EITHER Question 2(d) OR 2(e).

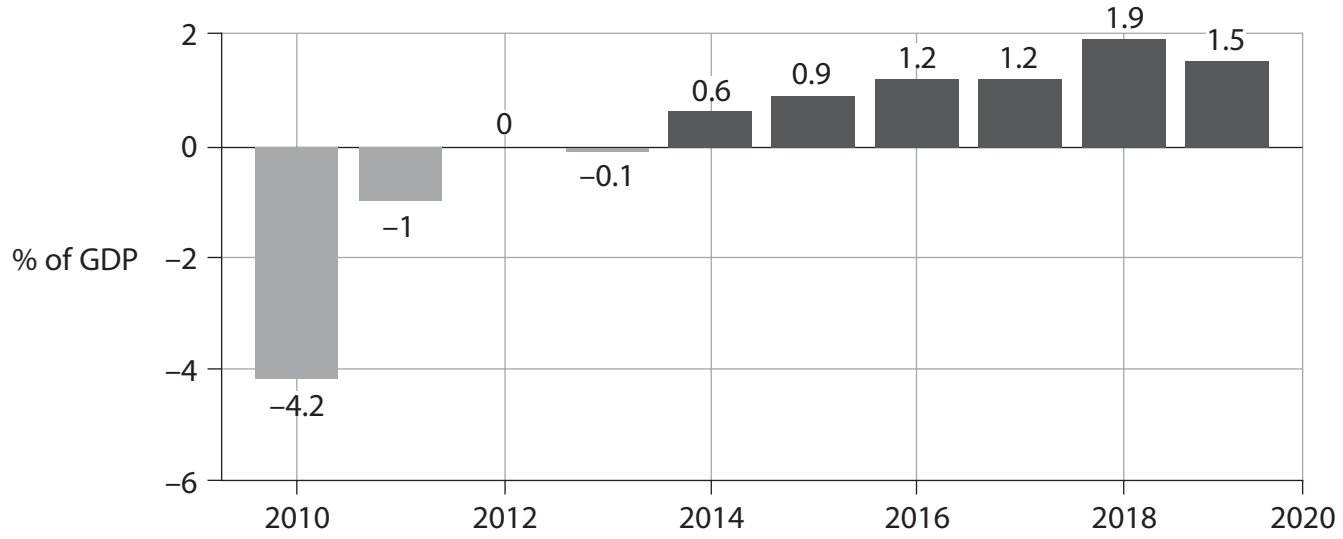
Write your answers in the spaces provided.

You are advised to spend 1 hour on this section.

Question 2

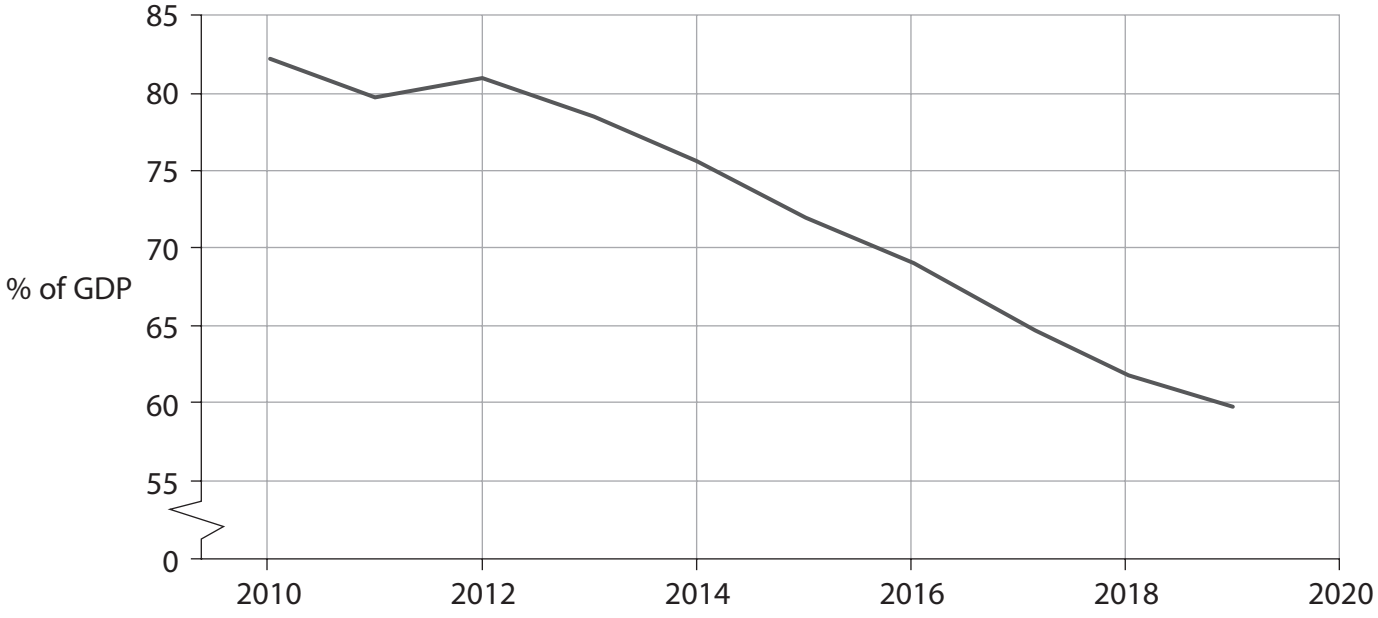
The German economy

Figure 1: German government budget balance, percentage of GDP, 2010 to 2019



(Source adapted from: The Economist Nov 14th 2019)

Figure 2: German national debt, percentage of GDP, 2010 to 2019

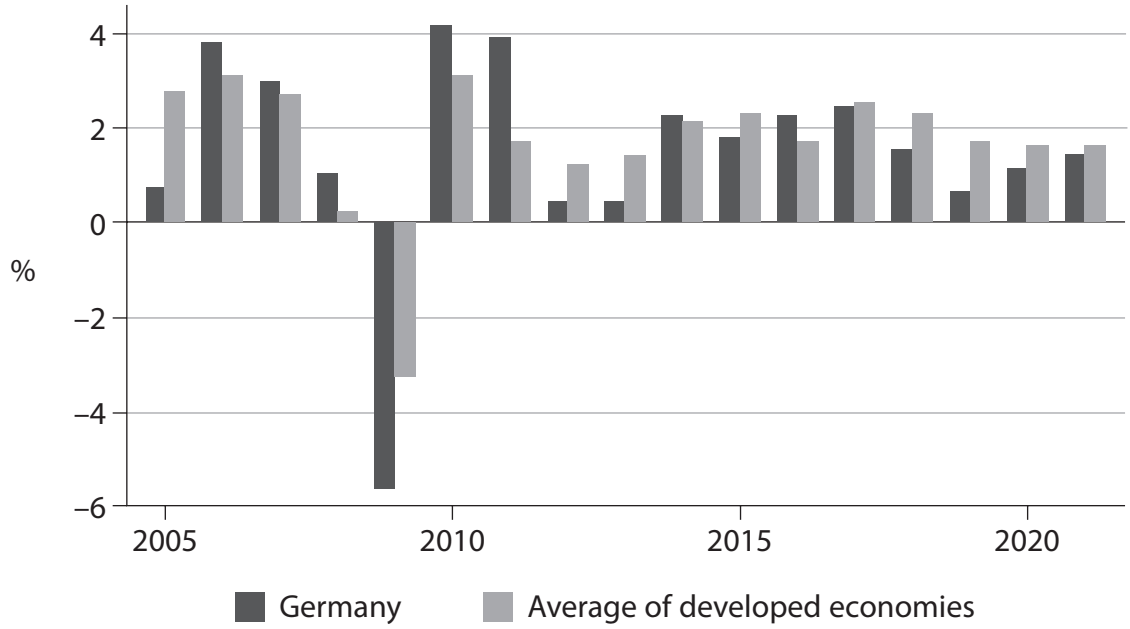


(Source adapted from: The Economist Nov 14th 2019)

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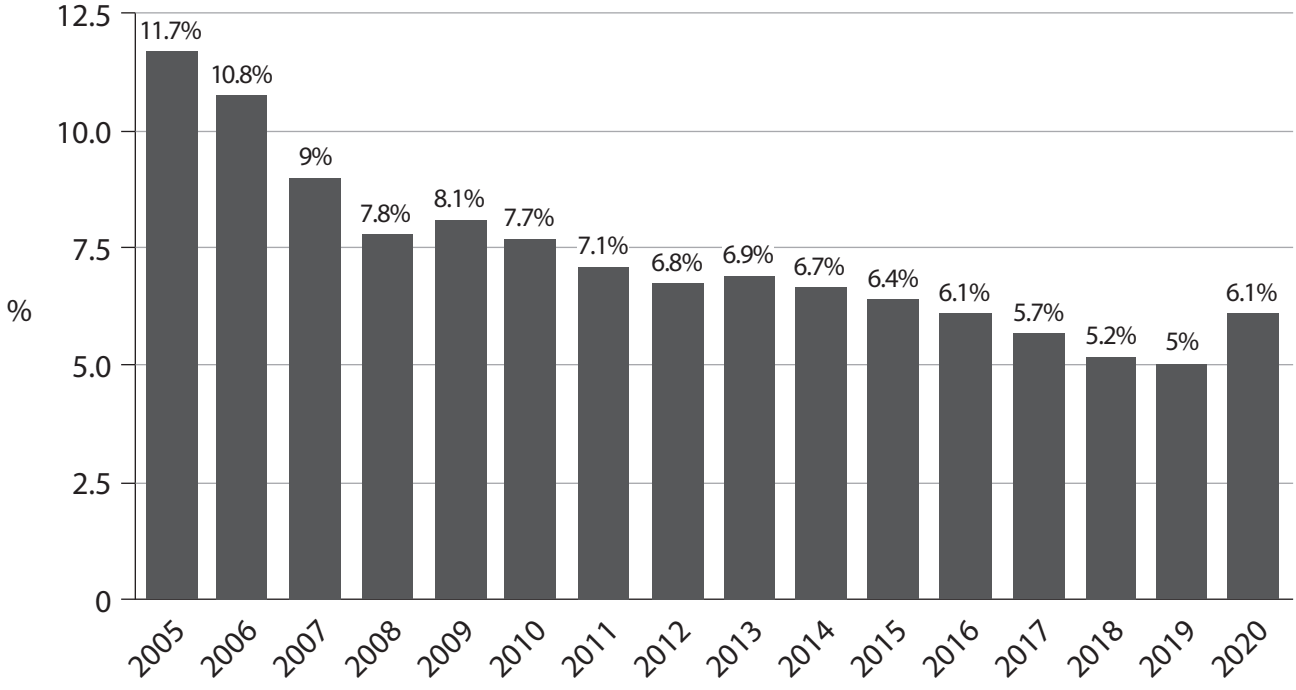
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Figure 3: Annual percentage change in real GDP, Germany and average of developed economies, 2005 to 2021 (forecasted data for 2020 and 2021)



(Source adapted from: IMF and German Federal Statistical Office)

Figure 4: Unemployment rate in Germany, percentage of labour force, 2005 to 2020 (2020 figure is forecasted)



(Source adapted from: bundesagentur für arbeit.de and https://www.ft.com/content/5486b247-c73e-4887-a2b2-528b23e301a6)

Extract C

Why Germany keeps to budget rules despite a slowdown in growth

Germany's economic boom is over, as it has entered recession. During the last ten years of economic growth well over 4 million jobs were created.

The fear of recession has revived a debate in Germany: should the government spend more to stimulate growth? It is written into the German constitution that the fiscal deficit cannot be greater than 0.35% of GDP, once the effects of the economic cycle have been removed. Germany's budget has been in surplus since 2014 and the government is always reluctant to increase spending which would create a deficit. In 2018, aided by booming employment and low interest costs on existing debt, the budget ran to a surplus 1.9% of GDP.

Germany's main trading partners have long been angered by German fiscal policy. The French President criticised Germany's budget and current account surpluses that "always occur at the expense of others".

Large parts of Germany's infrastructure need significant investment. As the economy has slowed, a decision to run a balanced-budget policy has become harder to defend. In wealthy regions of Germany, crumbling schools have been closed for fear of collapse, and information and mobile technology on a wide scale needs to be modernised. The World Economic Forum reported that accessibility of fibre optic broadband also "remains the privilege of the few". However, private sector firms, such as major motor manufacturers, are still willing to invest in new technology and the profitability of some of these firms, in the long run, benefits as a result.

The state development bank puts Germany's investment shortfall at €138 billion (£120 billion). Arguments for a much more expansionary fiscal policy have failed to influence government policy. Big government programmes, such as a recent package to reduce Germany's carbon emissions, are only implemented when they satisfy fiscal rules.

(Source adapted from: The Economist Nov 14th 2019 and https://www.ft.com/content/3cec4908-d164-11e9-8367-807ebd53ab77 7th September 2019 and https://www.ft.com/content/198f072e-4e42-11ea-95a0-43d18ec715f5 and https://www.ft.com/content/d89d9404-c586-11e9-a8e9-296ca66511c9 and https://www.ft.com/content/8f87c03c-93dc-11e8-b67b-b8205561c3fe)

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Extract D

Germany drops to number 7 in the Global Competitiveness Index

Despite being the largest economy in the European Union, Germany's competitiveness is declining, according to the World Economic Forum (WEF). Germany dropped four places in the WEF's Global Competitiveness Index, coming in as the seventh-most competitive economy. Out of the 103 indicators used in the report, Germany received lower scores in 53 areas in 2019. 5

(Source: https://www.dw.com/en/germany-falls-in-global-competitiveness-ranking/a-50745071 8 October 2019)

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2 (a) Explain **one** reason why a country such as Germany wants to avoid an increase in the national debt relative to GDP (Figure 2).

(5)

(b) Examine **two** likely effects of the forecast change in the rate of unemployment between 2019 to 2020, on firms in Germany. Refer to Figure 4 in your answer.

(8)

(c) Discuss the likely impact of investment in new technology on the profitability of firms in Germany, as described in Extract C line 20. Use a cost and revenue diagram to support your answer.

(12)

EITHER

(d) Evaluate the microeconomic and macroeconomic factors which are likely to determine the rate of economic growth in Germany relative to other developed economies.

(25)

OR

(e) Evaluate the microeconomic and macroeconomic impacts of 'a much more expansionary fiscal policy' (Extract C line 23) on the German economy.

(25)

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(a) Explain **one** reason why a country such as Germany wants to avoid an increase in the national debt relative to GDP (Figure 2).

(5)

The national debt is the accumulated stock of past government borrowing, the total of past fiscal deficits minus surpluses.

One reason Germany wants to avoid an increase in debt relative to GDP is the opportunity cost of debt interest payments. A higher debt means more of each year's spending goes on interest instead of on current or capital spending, such as the €138 billion investment shortfall in schools and broadband (Extract C). Higher debt also increases the risk that lenders demand higher interest rates or that the credit rating is downgraded, making it harder to borrow in a future crisis, and it may mean higher taxes for future generations, today's benefits paid for in the future. Higher interest payments would themselves worsen the fiscal deficit.

Figure 2 shows Germany's debt falling from about 82% of GDP in 2010 to about 60% in 2019, helped by budget surpluses since 2014, peaking at 1.9% of GDP in 2018 (Figure 1). Keeping debt low gives Germany the fiscal space and independence to respond to recession without needing to borrow at high cost.

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(b) Examine **two** likely effects of the forecast change in the rate of unemployment between 2019 to 2020, on firms in Germany. Refer to Figure 4 in your answer.

(8)

Figure 4 shows unemployment is forecast to rise from 5% in 2019 to 6.1% in 2020, an increase of 1.1 percentage points, after many years of decline from 11.7% in 2005.

First, consumer demand is likely to fall. Workers who lose their jobs suffer a fall in income, and those still employed may save more because of job insecurity, so consumption falls. Firms selling normal goods, especially luxuries with a high income elasticity of demand such as new cars, face a fall in demand, so revenue and profits fall. Through the negative multiplier effect, falling spending reduces demand for other firms too, so some may cut output, postpone investment or close.

Second, firms will find it easier and cheaper to recruit staff. With more spare labour, there are more applicants for each vacancy, so recruitment costs fall, labour turnover falls because workers are less likely to quit, and pressure for wage rises is reduced, so firms may be able to pay lower wages. This reduces unit labour costs and may increase profit margins. However, if workers stay unemployed for long, they lose skills, reducing efficiency when firms want to hire again.

However, the effects may be limited. The rise is small and unemployment would still be far below the 11.7% of 2005, so the impact on demand will be relatively small. Firms selling inferior goods may see demand rise. Wages tend to be sticky downwards, especially in Germany where collective bargaining agreements with trade unions are common, so labour costs may not fall. Firms that export may not be affected if demand abroad remains strong. Finally, this is only a forecast, and given events at the beginning of 2020, the rise in unemployment could be much worse.

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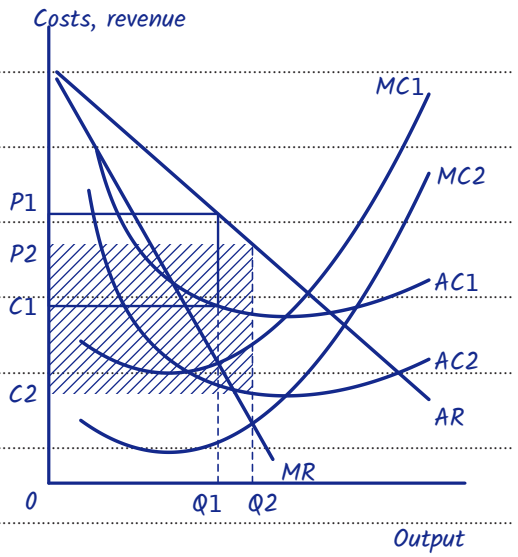
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(c) Discuss the likely impact of investment in new technology on the profitability of firms in Germany, as described in Extract C line 20. Use a cost and revenue diagram to support your answer.

(12)

Profitability depends on the difference between revenue and costs. Investment in new technology, such as automation, robotics and electric vehicle production by German motor manufacturers, can affect both.

In the short run, costs are likely to rise. New machinery is a large fixed cost, financed by borrowing or retained profits, and workers must be retrained, while production may be disrupted as new systems are installed. Average costs rise, so profits fall in the short run.



In the long run, if the investment is successful, labour productivity rises, so less labour and fewer materials are needed for each unit of output. Both fixed and variable costs per unit can fall, and firms may gain economies of scale. In the diagram, marginal and average costs fall from MC1 and AC1 to MC2 and AC2. A profit-maximising firm produces where MC = MR, so output rises from Q1 to Q2 and price falls from P1 to P2, but because unit costs fall by more, supernormal profit rises from the outlined area to the larger hatched area P2 to C2. This is why some German firms expect their profitability to benefit in the long run (Extract C).

New technology also raises revenue. It improves product quality and choice, for example more efficient, low-emission cars with better digital features, which increases demand and makes it less price elastic, shifting AR and MR to the right and giving firms more price-setting power. Dynamic efficiency is improved, as profits can be reinvested in further research and development.

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However, the impact depends on several factors. Whether costs rise or fall depends on the time period and on whether the investment is successful: many new technologies fail or take years to pay back, and in a recession the extra capacity may not be used. It depends on how labour intensive production is: firms that are already capital intensive gain less from automation. It depends on what competitor countries are doing: if American and Chinese car makers invest in the same technology, any cost advantage is competed away and prices fall, so supernormal profits do not last, especially in competitive markets. New technology cannot be discussed in isolation: it needs highly skilled labour and good infrastructure, yet broadband access 'remains the privilege of the few', schools are crumbling, and Germany has dropped to seventh in the Global Competitiveness Index with lower scores in 53 of 103 indicators (Extract D). Overall, investment is likely to reduce profits in the short run but raise them in the long run, provided the wider infrastructure and skills are improved too.

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EITHER

(d) Evaluate the microeconomic and macroeconomic factors which are likely to determine the level of economic growth in Germany relative to other developed economies.

(25)

OR

(e) Evaluate the microeconomic and macroeconomic impacts of 'a much more expansionary fiscal policy' (Extract C line 23) on the German economy.

(25)

Indicate which question you are answering by marking a cross in the box ☒. If you change your mind, put a line through the box ☒ and then indicate your new question with a cross ☒.

Chosen question number: **Question 2(d)** ☒ **Question 2(e)** ☒

Write your answer here:

Question 2(d)

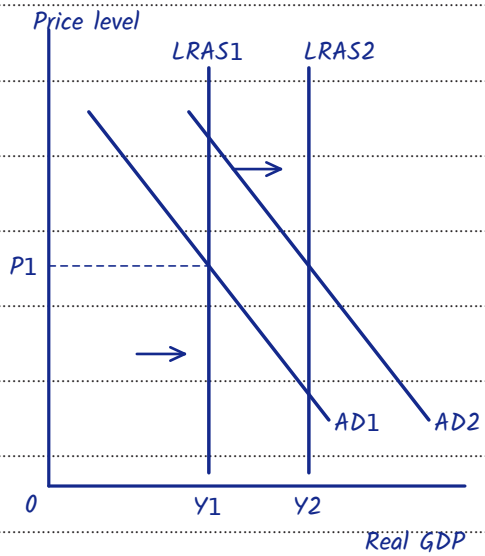
Economic growth is the increase in real GDP (actual growth) or in the productive potential of the economy (potential growth). Figure 3 shows that Germany's growth has varied relative to other developed economies: it fell more in 2009 (about −5.6% against about −3.2%) and recovered faster in 2010 and 2011 (about 4.2% and 3.9%), but it grew more slowly in 2012 and 2013 (about 0.5%) and in 2019 (about 0.6% against about 1.7%).

A key microeconomic factor is investment in capital and technology. Private firms such as major motor manufacturers are still willing to invest in new technology, which raises productivity and shifts LRAS right, as in the diagram from LRAS1 to LRAS2, so real GDP rises from Y1 to Y2. However, infrastructure investment is weak: the state development bank puts the investment shortfall at €138 billion, schools have been closed for fear of collapse and broadband 'remains the privilege of the few'. Poor infrastructure raises firms' costs and holds back digital industries, and a low willingness to embrace modern technologies reduces growth relative to more digital economies such as the USA.

Labour market factors also matter. Unemployment fell from 11.7% in 2005 to 5% in 2019 (Figure 4), showing a flexible labour market and allowing well over 4 million jobs to

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be created, but low unemployment now means labour shortages could limit growth. The introduction and increases of a national minimum wage raise unit labour costs. Investment in education and skills, including Germany's apprenticeship system, raises human capital and productivity. Competitiveness is declining: Germany dropped four places to seventh in the Global Competitiveness Index (Extract D), which will reduce export growth.



Macroeconomic factors are equally important. Fiscal policy has been tight: the constitution limits the structural deficit to 0.35% of GDP and the budget has been in surplus since 2014, reaching 1.9% of GDP in 2018 (Figure 1). This reduces AD and public investment, holding back growth, although debt has fallen to about 60% of GDP (Figure 2). Expansionary fiscal policy would shift AD to the right, from AD1 to AD2. Monetary policy is set by the ECB for the whole eurozone, so interest rates and QE may not suit Germany's needs. Germany is very dependent on exports, so its growth depends on world demand, trade liberalisation and protectionism: the US to China trade war, tariffs and slower growth in China, and the UK leaving the EU all reduce demand for German exports, explaining why Germany suffered more in 2009. The value of the euro is lower than a German currency would be, keeping exports price competitive and supporting a large current account surplus. Demographics also matter: an ageing population reduces the labour force, although immigration has increased it. Tax and benefit changes affect incentives to work and invest.

However, growth is a relative issue, so Germany's performance depends on what other countries do. If other developed economies invest more in technology, or have a comparative advantage in growing sectors such as digital services, Germany will fall behind

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even if its own policies improve. The euro exchange rate cannot be controlled directly by Germany, as it depends on the ECB and on the whole eurozone, so this advantage could disappear.

The degree to which each factor succeeds is uncertain. Infrastructure investment has long time lags, so its effect on growth will take years, while export demand can change very quickly. Germany's strong public finances, with low debt, mean it is better protected from worldwide crises such as the recent global health crisis, because it can afford a large fiscal stimulus without a debt crisis, which may allow it to grow faster than other developed economies in the recovery.

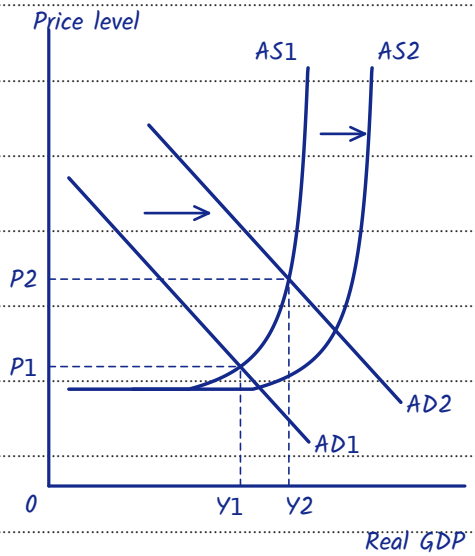
Growth is also not the only desirable outcome. Slower growth may be better if it protects the environment, which is why Germany has a package to reduce carbon emissions, and if it avoids inflation and debt. Forecasts for 2020 and 2021 may also be wrong.

In conclusion, in the short run Germany's growth relative to other developed economies is mainly determined by macroeconomic factors, especially world demand for its exports and its tight fiscal policy. In the long run, microeconomic supply-side factors, particularly investment in infrastructure, digital technology and skills, are most important. Germany's low debt gives it the opportunity to close its investment gap, and doing so is the key to faster growth.

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Question 2(e)

Expansionary fiscal policy means increasing government spending and/or cutting taxes to increase aggregate demand, which would move Germany's budget from a surplus of about 1.5% of GDP in 2019 (Figure 1) towards a deficit.



At a macroeconomic level, government spending is a component of AD (C + I + G + X − M), so AD shifts right from AD1 to AD2 in the diagram.

Through the multiplier, the initial injection creates further rounds of income and spending, so real GDP rises by more than the original spending, from Y1 to Y2. With growth of only about 0.6% in 2019 (Figure 3) and recession feared, this could prevent a downturn and reduce unemployment, which is forecast to rise to 6.1% (Figure 4). If the spending is on infrastructure, such as schools and broadband, it also raises productive capacity, shifting AS to the right from AS1 to AS2, so growth is sustainable and less inflationary. Higher incomes raise spending on imports, reducing the current account surplus that has angered France and other trading partners, and benefiting the rest of the eurozone.

At a microeconomic level, more jobs are created and incomes rise or stop falling, especially in construction. Better broadband, mobile technology and transport reduce firms' costs and raise productivity, and modern schools improve human capital. Higher demand raises firms' revenue and profits, for example motor manufacturers, encouraging them to invest more through the accelerator effect. Spending on health and welfare improves public services and living standards.

However, there are costs. The price level is likely to rise as AD increases, especially as unemployment is already low, so there is little spare capacity. Borrowing increases, so national debt, which fell to about 60% of GDP (Figure 2), would rise again, adding debt

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interest payments, which have an opportunity cost, and a burden on future generations. Higher taxes may be needed in the future, which could reduce incentives to work and invest, and government borrowing could crowd out private investment by raising interest rates.

The effect depends on the shape of the AS curve. Keynesians argue that with spare capacity in a recession, the extra AD mainly raises output, while Classical economists argue that the economy is near full capacity, so the main effect is higher prices and crowding out. It depends on the size of the multiplier: Germany is very open, with a high marginal propensity to import, and German households save a lot, so leakages are large and the multiplier may be small.

The cost of borrowing is currently very low, with low interest costs on existing debt (Extract C), so the opportunity cost of borrowing to invest in infrastructure with a high return is small. Interest rates may not remain low, but long-term borrowing can be locked in now. There are also legal constraints, as the constitution limits the structural deficit to 0.35% of GDP, so a much more expansionary policy may not be allowed. Time lags mean infrastructure projects take years to plan, so the stimulus may arrive after the slowdown is over. Confidence matters: if households expect higher future taxes, they may save more, reducing the effect. Fiscal policy may also conflict with ECB monetary policy.

In conclusion, a much more expansionary fiscal policy, focused on infrastructure investment, would raise AD and long-run capacity, and the costs are small given very low borrowing costs and debt of about 60% of GDP. In the recent context of the global health crisis it is essential, as without stimulus many incomes and businesses would be lost. Its success depends on spending being well targeted and on the multiplier, but the benefits are likely to outweigh the risk of higher debt.

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(Total for Question 2 = 50 marks)

TOTAL FOR SECTION B = 50 MARKS
TOTAL FOR PAPER = 100 MARKS

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