Please check the examination details below before entering your candidate information

Candidate surname	Other names
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Centre Number | Candidate Number

Pearson Edexcel Level 3 GCE

Friday 7 June 2024

Morning (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.

Turn over ▶

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SECTION A

Read Figures 1 and 2 and the following extracts (A to C) 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

The energy market

Figure 1: UK wholesale gas prices per therm, 2021, in pence

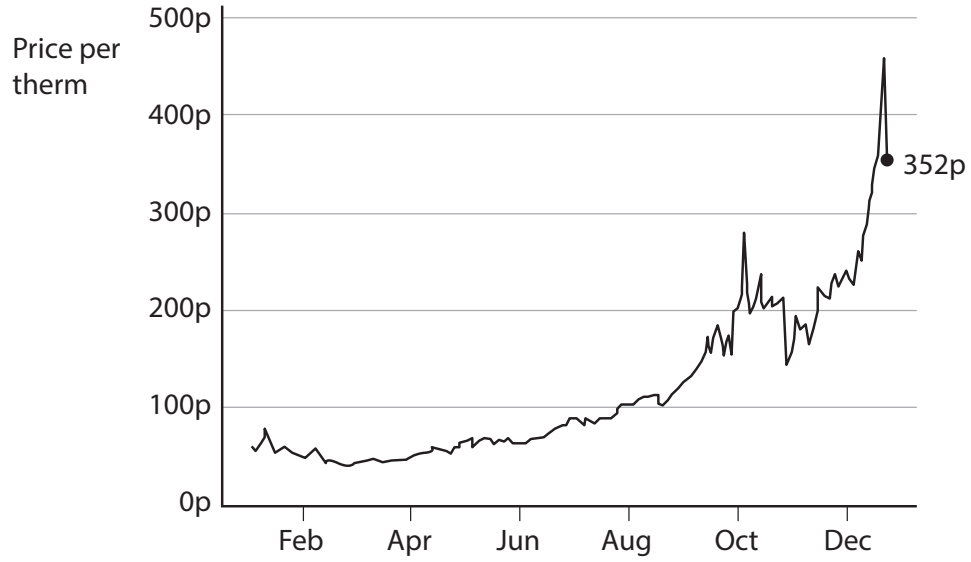
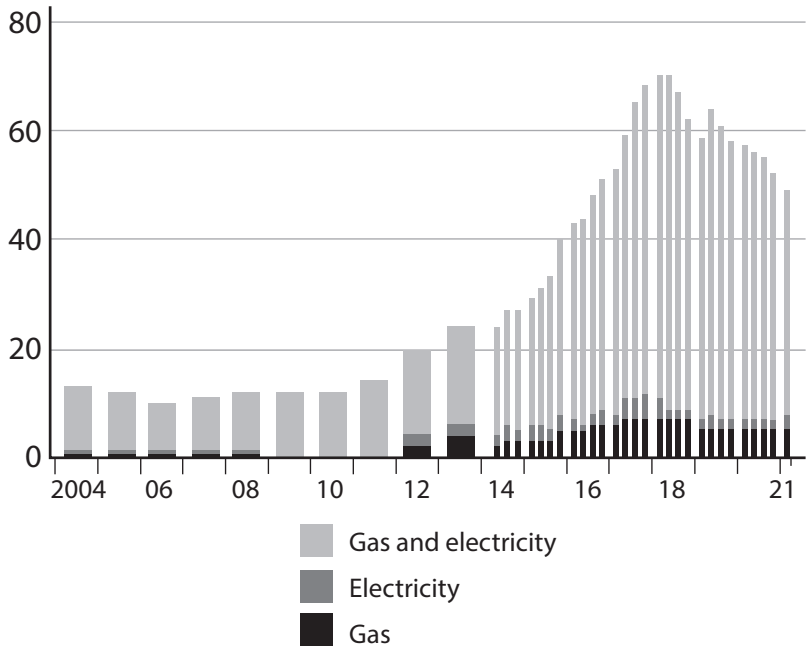


Figure 2: Number of firms supplying gas and electricity in the UK, 2004–2021



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Extract A

Rising gas prices

UK consumers are some of the biggest users of gas. 85% of homes use gas central heating, and gas generates a third of the country's electricity. North Sea gas is running out – and as Britain has replaced coal-fired energy production with wind power in order to reduce carbon emissions, it has become dependent on gas imports.

Almost all UK businesses face significant rises in fuel costs over the next few months, and there is no substitute for energy, at least in the short run – an almost perfect example of price inelastic demand.

(Source: adapted from https://www.theecoexperts.co.uk/blog/reasons-for-uk-gas-price-increase)

Extract B

The UK gas market is broken

During the past decade the government has allowed new entrants into the retail energy market with business models that left them ill-prepared to achieve long term business growth. Now the UK must choose between letting its energy market collapse and offering large subsidies for energy retailers.

The problem began in the 1980s and 1990s, when privatisation created an oligopolistic energy market dominated by the "Big Six", which paid their shareholders high dividends and their bosses excessive salaries. The government responded to anger over high energy bills with further liberalisation. Some of the new entrants were innovative, such as Bulb, which offered consumption-tracking apps, and Octopus, which discouraged consumption when demand was high with dynamic pricing. But most were under-capitalised and produced no energy, merely buying it on global wholesale markets and selling it on. Some paid little attention to ensuring continuity of supply or forward buying of gas.

The constraints on energy retailers worsened in 2017 with the closure of a big gas-storage facility, which left the UK able to store just 2% of its annual demand. Other big gas importing countries, by contrast, can store 20%–30%. The risks rose further in 2019, when the government capped consumer prices in response to continued complaints about high energy bills.

The perfect storm came in the summer of 2021. As economies opened up, global demand for energy rose. Gas supply in Russia, a big producer, was disrupted, and unusually calm weather reduced UK wind turbine energy production to 11% of capacity. In August Ofgem, the industry regulator, said that from October the firms would be able to raise prices for households by 54%. But since then the wholesale price of gas paid by UK energy firms has risen by more than 70%. The result is that UK energy firms are tied into contracts to supply gas to households at far less than they must pay to get it.

(Source: adapted from https://www.economist.com/britain/britains-gas-market-is-broken/)

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Extract C

The gender pay gap in the oil and gas industry

Despite best efforts to try to attract more women into the oil and gas industry, females are still hugely under-represented in science, technology, engineering and maths careers, whether school leavers, graduates or experienced workers. Women hold under 25% of careers in these areas, and typically hold more non-technical roles, which can attract lower salaries than technical disciplines.

There is an even smaller female representation in the offshore workforce (3.6%) e.g. working on rigs in the North Sea, an area that pays higher salaries than onshore work. Despite continued efforts there is still a lack of female applications. Only 5% of the applications to the technical apprentice programme were female, of which half withdrew their applications at the first stage of the recruitment process.

There is also a low representation of females in senior leadership roles within the oil and gas industry, especially in technical positions. Women also generally take up part-time positions which are typically lower paid. This has resulted in the oil and gas industry having an average gap in hourly pay of 25%.

In the majority of developed countries, women have made substantial progress in the labour market since the 1970s, with both wages and labour force participation increasing relative to that for men. Notwithstanding these large improvements, women still earn less than 'comparable' men in all developed countries and, since the 2000s, progress for women in the labour market seems to have slowed.

(Source: adapted from https://www.harbourenergy.com/media/2a2nmavb/chr-18311-01-gender-pay-gap-2020-v6-final.pdf and https://ftp.iza.org/dp10975.pdf)

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1 (a) With reference to Figure 1 and Extract A, explain what is meant by 'price inelastic demand' (line 8).

(5)

(b) Examine **one** likely externality that arises when a producer generates electricity by burning gas. Use a diagram to show the external costs of production.

(8)

(c) With reference to Figure 2 and Extract B, discuss the possible constraints on business growth for firms supplying energy to households in the UK.

(12)

EITHER

(d) Evaluate the microeconomic and macroeconomic factors that explain gender-based wage differences in the UK oil and gas industry.

(25)

OR

(e) Evaluate the microeconomic and macroeconomic advantages for a country specialising in energy production using gas.

(25)

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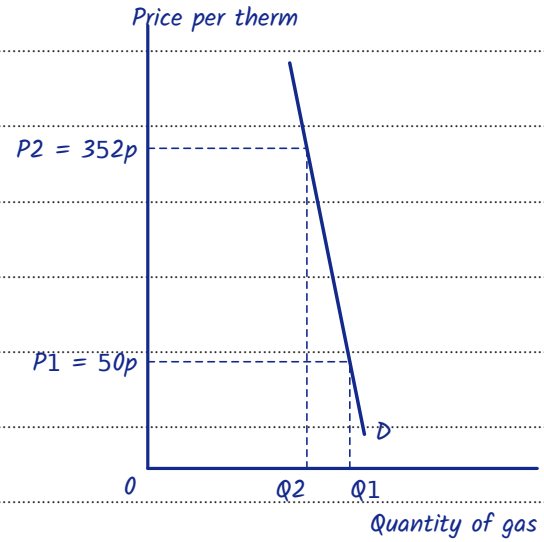
(a) With reference to Figure 1 and Extract A, explain what is meant by 'price inelastic demand' (line 8).

(5)

Price inelastic demand means that quantity demanded is relatively unresponsive to a change in price, so the percentage change in quantity demanded is smaller than the percentage change in price. The value of PED lies between 0 and −1 (ignoring the sign, PED < 1).

Demand for gas is inelastic because it is a necessity with few substitutes: 85% of UK homes use gas central heating, gas generates a third of the country's electricity and there is 'no substitute for energy, at least in the short run' (Extract A).

Figure 1 shows the wholesale price rising from about 50p per therm in February 2021 to 352p per therm in December 2021, a rise of about 604% ((352 − 50) ÷ 50 × 100), yet users still had to buy almost the same quantity. As the diagram shows, along a steep demand curve the rise in price from P1 to P2 causes only a small fall in quantity from Q1 to Q2, so the total revenue of gas sellers rises.



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(b) Examine **one** likely externality that arises when a producer generates electricity by burning gas. Use a diagram to show the external costs of production.

(8)

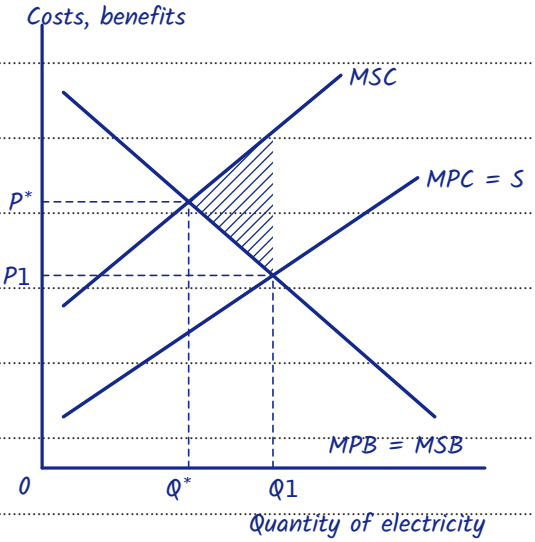
An externality is a cost or benefit that affects a third party who is outside the market transaction, so it is not reflected in the market price. When a power station burns gas to generate electricity, it releases carbon dioxide and other greenhouse gases, as well as nitrogen oxides, into the air. This air pollution contributes to climate change and harms the health of people living nearby, for example through respiratory illness, which raises NHS costs. These are external costs of production that the producer does not pay for.

This matters in the UK because gas generates a third of the country's electricity (Extract A). Britain has replaced coal-fired power with wind power to reduce carbon emissions, but when calm weather reduced wind turbine production to just 11% of capacity in 2021 (Extract B), more gas had to be burned, increasing emissions.

In the diagram, the marginal social cost (MSC) is above the marginal private cost (MPC) by the external cost. The market produces where MPC = MSB at Q1 and price P1, but the socially optimal output is Q^*, where MSC = MSB, at price P^*. Electricity is therefore over-produced and under-priced, and the shaded triangle shows the welfare loss caused by overproduction between Q^* and Q1. This is a market failure because resources are misallocated.

However, the size of the externality is difficult to quantify and to give a monetary value, so it is hard to know exactly where MSC lies; a full cost-benefit analysis would be needed. Gas is also less polluting than coal, producing around half the carbon emissions per unit of electricity, so the external cost is smaller than for the coal power it replaced, and gas power gives energy security when wind output is low. The impact also depends on government intervention: carbon pricing internalises part of the external cost, and in the long run the problem should shrink as renewables become cheaper relative to fossil fuels.

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(c) With reference to Figure 2 and Extract B, discuss the possible constraints on business growth for firms supplying energy to households in the UK.

(12)

Business growth is an increase in the size of a firm, measured by sales, market share or capacity, and can be organic or through mergers. Figure 2 shows that the number of firms supplying gas and electricity rose from about 13 in 2004 to about 70 in 2018, but then fell to about 50 by 2021. Many new entrants were unable to grow and left the market, which suggests that there are serious constraints on growth.

The first constraint is government regulation. In 2019 the government capped consumer prices, and in August 2021 Ofgem allowed prices for households to rise by 54% from October, but the wholesale price of gas had since risen by more than 70% (Extract B). Figure 1 shows gas rising from about 50p to 352p per therm in 2021. Firms were tied into contracts to supply households at far less than they had to pay for gas, so each extra customer added to losses. Without profits to reinvest, firms cannot finance growth, and many collapsed.

A second constraint is a lack of economies of scale and finance. Most new entrants were undercapitalised and produced no energy, merely buying it on wholesale markets and selling it on. As the diagram shows, a small firm producing at Q1 has a higher average cost (AC1) than the Big Six producing at the minimum efficient scale Q2 (AC2), so it cannot match their prices. Small firms also lack access to finance for capital spending, such as gas storage, and the UK can store only 2% of its annual demand compared with 20% to 30% in other countries.

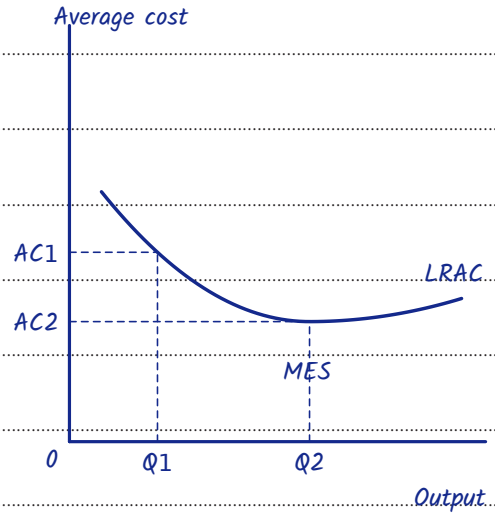
Third, the size of the market limits growth. Demand for energy is price inelastic and household demand grows slowly, so a firm can only grow by taking market share from rivals. In an oligopoly dominated by the Big Six, incumbents may use predatory pricing or rely on brand loyalty and consumer inertia, as many households never switch supplier.

Finally, firms lacked information and paid little attention to continuity of supply or

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forward buying of gas, leaving them exposed to volatile wholesale prices.

However, the most important constraint is probably the combination of the price cap with the sharp rise in wholesale prices, because this turned revenue below cost for every firm without its own supply. This was specific to 2021, when demand rose as economies opened up and Russian supply was disrupted, so it may be a short-run constraint rather than a permanent one. Different firms face different constraints: innovative firms such as Octopus, with dynamic pricing, and Bulb, with consumption-tracking apps, were able to grow, showing that dynamic efficiency can overcome size disadvantages. Fewer economies of scale are needed for a purely retail operation than for generation. Some owners may choose to stay small and satisfice. If the regulator had required firms to hold more capital and to hedge by forward buying, the market could have allowed new businesses to grow sustainably. Overall, regulation and wholesale price volatility were the most significant constraints, made worse by weak finance.



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EITHER

(d) Evaluate the microeconomic and macroeconomic factors that explain gender-based wage differences in the UK oil and gas industry.

(25)

OR

(e) Evaluate the microeconomic and macroeconomic advantages for a country specialising in energy production using gas.

(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)

A gender pay gap is the difference between the average hourly earnings of men and women. In the oil and gas industry the average gap in hourly pay is 25% (Extract C), well above the UK average of around 15%. In a competitive labour market, wages are set by the demand for labour, which is derived demand based on the marginal revenue product (MRP) of workers, and the supply of labour.

A key microeconomic factor is occupational segregation. Women hold under 25% of STEM careers and typically hold non-technical roles, which attract lower salaries than technical disciplines. Technical workers such as engineers have a high MRP and are scarce, so their wages are high, while non-technical administrative roles have a lower MRP and many substitutes. Offshore work, which pays higher salaries than onshore work, has only 3.6% female representation. Because women are crowded into fewer, lower-paid occupations, the supply of labour to these jobs increases, as shown in the diagram by the shift from S1 to S2, pushing the wage down from W1 to W2.

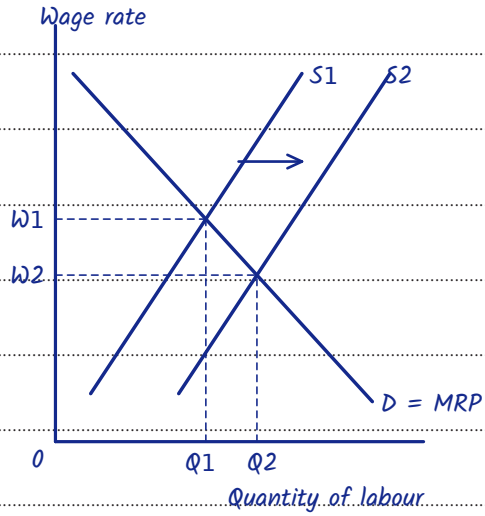
Supply-side factors within the industry also matter. Only 5% of applications to the technical apprentice programme were female, and half of these withdrew at the first stage, so few women acquire the human capital for higher paid roles. Women also

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generally take part-time positions, which are typically lower paid, and are more likely to take career breaks as primary caregivers, so they gain less work experience and promotion. Their supply of labour may be less wage elastic and less geographically mobile, which allows employers with monopsony power to pay them less. Women are also less likely to be trade union members, so they have less bargaining power.

Discrimination and stereotyping are another cause. Employers may have unconscious bias or a 'taste' for discrimination, valuing women's productivity below its true level, which reduces demand for female labour and lowers their wages. A glass ceiling means there is low representation of women in senior leadership, especially in technical positions, and senior roles carry the highest pay, which widens the average gap. Information gaps about career opportunities may discourage female applications.

There are also macroeconomic factors. Underfunding of education and a shortage of teachers in STEM subjects mean fewer girls choose science and engineering, and cultural norms and gender stereotyping in schools reinforce this, so the supply of qualified women to the whole industry is low. A lack of affordable childcare and a tax and benefit system with high marginal effective tax rates for second earners returning to work encourage part-time work. Globalisation means oil and gas firms recruit internationally for technical roles, often from countries where few women train as engineers. Structural change also plays a part: as North Sea gas runs out and the economy moves towards renewables, new technical jobs may not reach women without retraining.



However, the 25% figure is an average gap in hourly pay, not unequal pay for the same work, which has been illegal since the Equal Pay Act 1970 and the Equality Act 2010.

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Much of the gap is therefore explained by the jobs women do rather than direct discrimination, which suggests occupational segregation, linked to STEM education, is the most important factor. The significance of factors changes over time: women have made substantial progress since the 1970s in wages and participation, but this has slowed since the 2000s, which implies the remaining barriers, such as childcare and stereotyping, are deeply rooted and long-run. Growing awareness, and more transparency required by law through gender pay gap reporting for firms with 250 or more employees, may reduce wage differences. The gap also depends on the nature of the industry: oil and gas is male-dominated and offshore work is physically demanding and far from home, so the gap is larger than in sectors such as education or health. Finally, it is a combination of factors, as low female applications reflect education, culture and working patterns together.

In conclusion, gender wage differences in the oil and gas industry are mainly explained by the low supply of women to technical, offshore and senior roles, caused by micro factors such as part-time work and career breaks and macro factors such as STEM education and childcare. Discrimination plays a smaller but real role. The gap is likely to narrow only slowly, unless policies increase the number of women entering technical apprenticeships.

Question 1(e)

Specialisation is when a country concentrates on producing a limited range of goods and services in which it is most efficient and trades for others. A country specialising in energy production using gas, such as Norway or Qatar, devotes a large share of its resources to extracting gas and generating electricity from it.

At a microeconomic level, specialisation allows energy firms to benefit from economies of scale. Gas production requires huge fixed costs for rigs, pipelines, storage and power stations, so technical, financial and purchasing economies of scale reduce long-run

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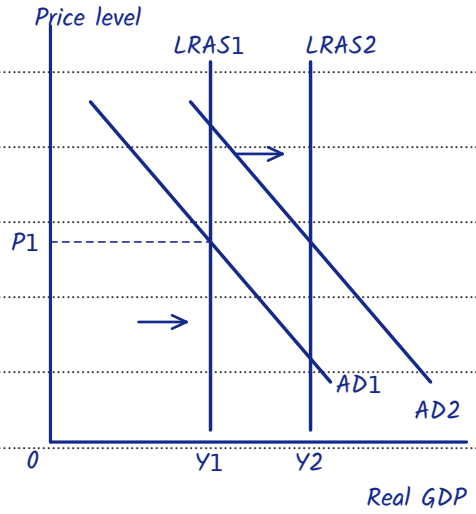
average cost as output rises. Lower costs give higher profits, which can be reinvested in exploration and new technology, increasing dynamic efficiency. Demand for gas is price inelastic, as 'there is no substitute for energy, at least in the short run' (Extract A), so when world prices rise, as from about 50p to 352p per therm in 2021 (Figure 1), producers gain large increases in revenue and exports. Domestic consumers and firms benefit from a secure supply at lower prices, increasing consumer surplus, and the country avoids the dependence on gas imports that the UK suffered as North Sea gas ran out. The industry's demand for labour raises wages: offshore work pays higher salaries than onshore work (Extract C). There may also be external benefits, as gas produces around half the carbon emissions of coal and provides reliable back-up when wind output falls to 11% of capacity (Extract B).

At a macroeconomic level, Ricardo's theory of comparative advantage shows that if a country specialises in the good it can produce at the lowest opportunity cost and trades, world output rises and the country can consume beyond its own production possibility frontier. Exports of gas are an injection, so AD shifts right from AD1 to AD2, as shown in the diagram, and through the multiplier real GDP rises from Y1 to Y2, creating jobs. Investment in gas capacity, often through FDI by transnational companies, increases the capital stock and shifts LRAS from LRAS1 to LRAS2, so growth is sustainable. Export revenues improve the current account, and tax revenue from gas profits, such as the UK's windfall tax, can fund public services or a sovereign wealth fund like Norway's, reducing inequality. Energy security also protects the country from cost-push inflation, because lower energy costs shift SRAS to the right, whereas the UK suffered rising inflation when gas prices rose.

However, the advantages depend on the magnitude of gas reserves and the country's use of gas. Gas is a finite resource, so the benefits are short run unless revenues are saved or invested: North Sea gas is running out (Extract A). Gas prices are highly volatile, so

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export revenues and tax receipts fluctuate, creating macroeconomic instability and uncertainty for investment. High export earnings can cause the currency to appreciate, making other exports less competitive, known as Dutch disease, so the country becomes over-reliant on imports for other goods and vulnerable to supply disruptions, with jobs displaced in other industries.



Comparative advantage theory also assumes constant returns and no transport costs, but piping or liquefying gas is expensive and diminishing returns set in as fields are depleted, raising costs. Specialisation in resource-intensive industries may lead to environmental degradation, and climate policies aiming at net zero may reduce long-run demand for gas, leaving stranded assets and declining terms of trade. The effect on growth also depends on spare capacity: if the economy is near full employment on the Keynesian LRAS, higher AD mainly causes inflation.

In conclusion, specialising in gas brings significant advantages in the short and medium run, through economies of scale, export-led growth, tax revenue and energy security, especially since demand is price inelastic. However, these are greatest for countries with large reserves that manage revenues carefully and diversify, because price volatility, depletion and the move to renewables make long-run dependence on gas risky.

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(Total for Question 1 = 50 marks)

TOTAL FOR SECTION A = 50 MARKS

Section B

Read Figure 3 and the extracts (D to F) before answering Question 2.

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

Write your answers in the spaces provided.

You are advised to spend 1 hour on this section.

Question 2

Ghana – cocoa and chocolate production

Figure 3: World's largest cocoa growers and chocolate producers

Cocoa growers	Chocolate producers
Ivory Coast 46%	Germany 17%
Ghana 18%	Belgium 11%
Indonesia 14%	Italy 7.4%
Nigeria 7%	US 7.2%

(Source: adapted from International Cocoa Association www.icco.org December 2021 and The Telegraph.co.uk accessed 24/2/22)

Extract D

From a managed to a floating exchange rate

Ghana's currency, the cedi, has depreciated significantly against major currencies, especially the US dollar (US$), since the adoption of the floating exchange rate system in 1992. From 1983 to 1992 it operated a managed exchange rate. Since the liberalisation of the foreign exchange market there have substantial swings and on average the cedi has depreciated 98% against the US dollar. The cedi to US dollar rate has been very volatile recently, causing macroeconomic instability and limiting economic growth. 5

(Source adapted from: https://www.theigc.org/project/on-the-causes-and-effect-of-exchange-rate-volatility-on-economic-growth-evidence-from-ghana/ and https://www.scirp.org/journal/paperinformation.aspx?paperid=95492)

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Extract E

There is a lot of money in chocolate but the growers of cocoa see very little of it.

In 2020 the chocolate retail industry was worth £78 billion, but Ghana – the world's second largest cocoa producer – earned just over £1 billion. Cocoa farmers in Ghana now make roughly $1 a day (this often includes being subsidised by the Ghanaian government). This is a familiar pattern for many African countries where the economy is still shaped by a colonial relationship in which they export commodities to be processed elsewhere.

Ghana currently processes about 30% of its cocoa crop into chocolate, meaning that the exports can earn high prices. Despite plans for expanding the domestic chocolate industry there are still many obstacles in the way. The equipment to make chocolate is very expensive and there is neither a local sugar nor dairy industry. Imported milk and sugar would increase the cost of production significantly, with the added problem that foreign currency would be needed. Producing chocolate requires consistent refrigeration, and the high cost of the equipment to achieve that is a major obstacle for entrepreneurs without substantial funds. There is an inconsistent supply of energy in rural parts of Ghana. An alternative, making teas and wines using cocoa, can make 20 times more revenue than the raw beans, but they do not have the mass market appeal and high profits of chocolate.

Access to funds is a big problem and one farmer, Nana Aduna, says that high interest rates on bank loans are an issue for start-up businesses and at the moment he cannot afford to borrow money. "You cannot grow a business when you have to service interest rates of 18%–20% or even more," he says.

But the government has pledged to address these structural issues, using supply side policies. The Trade and Industry Minister announced that industrialisation is the focus of government policy. "It only makes sense that the most important commodity in our country, which is cocoa… should become the target for a major programme of industrialisation," he says.

The 'One District One Factory' programme aims to kickstart industrialisation by providing the infrastructure for Ghana's farms, by establishing processing plants in some of the big cocoa-growing areas. It has become easier for the private sector to invest in food processing, and there is a big tax rebate available to processing companies that set up in the country's enterprise zones – designated areas to encourage economic activity – in a bid to help them export.

(Source: adapted from https://www.newsbreak.com/news/2201853748349/ghana-s-farmers-eye-sweet-success-from-chocolate and https://www.indepthnews.net/index.php/the-world/africa/4495-ghana-starts-with-cocoa-to-end-neocolonial-trading-ties and https://www.brookings.edu/blog/africa-in-focus/2020/09/03/pathways-to-structural-transformation-of-the-ghanaian-economy-and-some-roadblocks/ and https://www.ghanaweb.com/GhanaHomePage/business/Speculators-driving-interbank-retail-FX-rates-gap-1468375)

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Extract F

A new trade bloc for Africa

The African Continental Free Trade Agreement (AfCFTA) has been signed by all 55 member states of the African Union, including Ghana, Nigeria, and South Africa. This brings together 1.2 billion people with a combined gross domestic product (GDP) of more than $2 trillion as of 2023.

The agreement commits countries to removing tariffs on 90% of goods, with other goods to be phased in later.

The agreement also liberalises services and aims to tackle non-tariff barriers which reduce trade between African countries, such as long delays at the borders.

(Source adapted from: https://www.aljazeera.com/economy/2018/3/20/african-continental-free-trade-area-what-you-need-to-know)

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2 (a) Explain **one** reason why a country might operate a managed exchange rate. Refer to Extract D in your answer.

(5)

(b) With reference to the second paragraph of Extract E, examine **two** likely problems for the expansion of the chocolate industry in Ghana.

(8)

(c) Discuss factors influencing the level of aggregate demand in Ghana. Use an aggregate demand and aggregate supply diagram in your answer.

(12)

EITHER

(d) Evaluate the microeconomic and macroeconomic effects of high interest rates in Ghana, or another developing country of your choice.

(25)

OR

(e) Evaluate the microeconomic and macroeconomic effects of Ghana joining the African Continental Free Trade Agreement (Extract F).

(25)

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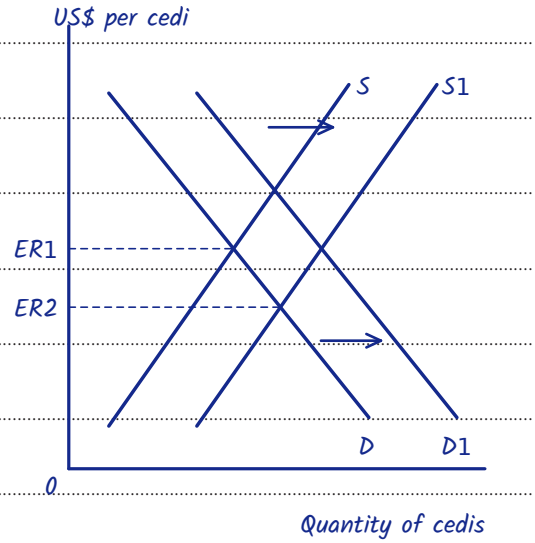
(a) Explain **one** reason why a country might operate a managed exchange rate.
Refer to Extract D in your answer.

(5)

A managed exchange rate is one where the value of the currency is mainly determined by market forces, but the central bank intervenes to keep it within an acceptable range, by buying or selling the currency using foreign currency reserves or by changing interest rates.

One reason is to reduce volatility and encourage stability. Since Ghana moved from a managed rate (1983 to 1992) to floating, there have been 'substantial swings' and the cedi has depreciated on average by 98% against the US dollar. This volatility causes macroeconomic instability: firms are uncertain about the cost of imported inputs and the value of export earnings, which discourages investment and limits economic growth.

As the diagram shows, if the supply of cedis rises from S to S1, the rate would fall from ER1 to ER2. The Bank of Ghana can buy cedis with its dollar reserves, shifting demand from D to D1, so the rate stays at ER1. A stable cedi also controls inflation by limiting rises in import prices, which encourages investment and growth.



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(b) With reference to the second paragraph of Extract E, examine **two** likely problems for the expansion of the chocolate industry in Ghana.

(8)

One likely problem is the high cost of raw materials. Ghana has neither a local sugar nor a dairy industry, so milk and sugar would have to be imported, which would 'increase the cost of production significantly' and requires foreign currency. Because the cedi has depreciated by 98% against the dollar on average (Extract D), imported inputs become ever more expensive in cedis. This raises the average and marginal costs of Ghanaian chocolate makers, so they would have to charge higher prices or accept lower profits. They would then be less internationally competitive than established producers such as Germany (17% of world chocolate production) and Belgium (11%), which benefit from large economies of scale and local dairy supplies.

A second problem is the high fixed cost of capital equipment and unreliable energy. The equipment to make chocolate is very expensive and producing chocolate requires consistent refrigeration, which is 'a major obstacle for entrepreneurs without substantial funds'. This acts as a barrier to entry, particularly as cocoa farmers earn only about $1 a day and cannot save to invest. The inconsistent supply of energy in rural parts of Ghana means machinery and refrigeration may fail, wasting output and reducing productivity. With high fixed costs and low output, firms cannot spread costs and suffer from a lack of economies of scale, so average costs stay high, discouraging FDI and limiting the expansion of processing beyond the current 30% of the cocoa crop.

However, these problems work in combination, so the extent of the obstacle depends on whether they can be solved together. Energy supply is probably the most significant, because without reliable refrigeration chocolate cannot be produced at all, whereas imported inputs only raise costs. In the long run, government supply-side policies such as the 'One District One Factory' programme and tax rebates in enterprise zones may reduce these problems. Firms could also diversify into cocoa teas and wines, which can

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earn 20 times more revenue than the raw beans and need less refrigeration, although they lack the mass market appeal of chocolate.

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(c) Discuss factors influencing the level of aggregate demand in Ghana. Use an aggregate demand and aggregate supply diagram in your answer.

(12)

Aggregate demand is the total planned spending on goods and services in an economy at a given price level, made up of AD = C + I + G + (X − M). Several factors influence its level in Ghana.

The first is the exchange rate. The cedi has depreciated on average by 98% against the US dollar (Extract D). A depreciation makes Ghana's exports, such as cocoa, cheaper in foreign currencies and imports more expensive, so net exports rise. Ghana is the world's second largest cocoa grower with 18% of world production (Figure 3), so exports are a large component of AD. As shown in the diagram, AD shifts right from AD1 to AD2, increasing real GDP from Y1 to Y2 and the price level from P1 to P2.

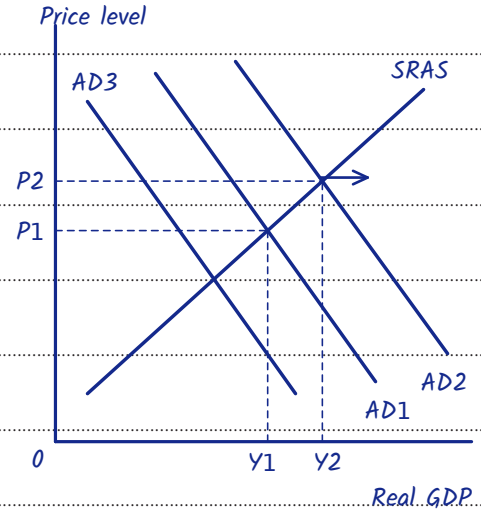
Second, interest rates and access to credit affect consumption and investment. Interest rates on bank loans of 18% to 20% or even more (Extract E) raise the cost of borrowing, so firms such as start-up chocolate makers cannot afford to invest and households borrow less. High rates also encourage saving, so C and I are low, keeping AD lower than it would otherwise be (a shift to AD3).

Third, consumer incomes are low: cocoa farmers make roughly $1 a day, so consumption is limited, although the poor have a high marginal propensity to consume, so any rise in income gives a large multiplier effect. Fourth, government policy affects G and I. The 'One District One Factory' programme provides infrastructure and processing plants, which increases government spending, and tax rebates in enterprise zones encourage private investment and exports. Finally, joining the AfCFTA, which removes tariffs on 90% of goods, should increase demand for Ghana's exports from a market of 1.2 billion people (Extract F).

However, the factors may offset one another: high interest rates reduce C and I at the same time as a weaker cedi raises net exports, so the overall effect depends on the

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relative size of the components of AD. In Ghana, exports are likely to be the most important factor, because the economy is open and dependent on cocoa. Yet the demand for cocoa is price inelastic, so a depreciation may raise export volumes only slightly while raising the cost of imported goods, such as milk, sugar and machinery, so net exports could even fall in the short run (the J-curve), unless the Marshall-Lerner condition holds. Exchange rate volatility also damages business confidence, reducing investment. Industrialisation and the AfCFTA will only raise AD in the long run, because of time lags in building factories and removing non-tariff barriers. Overall, AD in Ghana depends most on export demand and the cost of credit, and a combination of a stable cedi and lower interest rates would raise it most.



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EITHER

(d) Evaluate the microeconomic and macroeconomic effects of high interest rates in Ghana, or another developing country of your choice.

(25)

OR

(e) Evaluate the microeconomic and macroeconomic effects of Ghana joining the African Continental Free Trade Agreement (Extract F).

(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)

Interest rates are the cost of borrowing and the reward for saving. In Ghana the central bank sets the policy rate, and commercial bank lending rates are 18% to 20% or even more (Extract E), which is high compared with developed countries.

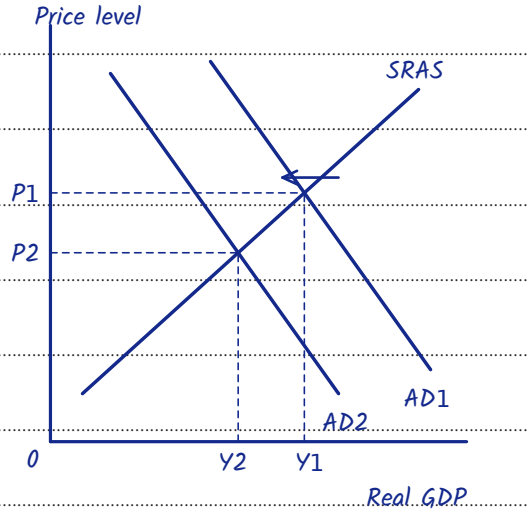
At a microeconomic level, high interest rates raise the cost of credit for businesses. Farmer Nana Aduna says 'You cannot grow a business when you have to service interest rates of 18%–20%', so start-ups cannot afford to borrow to buy expensive chocolate-making and refrigeration equipment. Firms with existing loans face higher fixed costs, reducing profits and competitiveness, and some reach their shut-down point and close. Fewer new entrants and the failure of small firms increase market concentration, reducing competition. Less borrowing for investment and R&D also reduces dynamic efficiency. Households with loans have less discretionary income, so demand for consumer goods and housing falls, reducing firms' revenue and consumer surplus, and lower demand for products reduces the derived demand for labour, putting downward pressure on wages and jobs.

At a macroeconomic level, higher saving and more expensive borrowing reduce consumption and investment, so AD shifts left from AD1 to AD2, as shown in the

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diagram. Through the negative multiplier, real GDP falls from Y1 to Y2, raising unemployment, but the price level falls from P1 to P2, so inflation is reduced, which is an important aim in Ghana, where inflation has been high. High interest rates attract hot money inflows, increasing demand for the cedi and slowing its depreciation, which has averaged 98% against the dollar (Extract D). This lowers import prices, reducing cost-push inflation, but makes cocoa exports less price competitive, worsening the current account. The government's cost of financing its debt rises, leaving less to spend on infrastructure such as 'One District One Factory'. Interest rates redistribute income from borrowers to savers and lenders, who tend to be richer, increasing inequality. In the long run lower investment reduces the capital stock, so LRAS grows more slowly, holding back industrialisation and development.

However, the central bank rate is not the rate that most individuals can access. Many Ghanaians work in the informal economy and lack access to formal bank credit or collateral, so interest rates have a weaker effect on their spending than in a developed country; farmers earning $1 a day hardly borrow from banks at all. The impact on firms depends on how large interest repayments are as a proportion of total costs and on whether loans are at fixed or variable rates. It also depends on interest rates in other countries: if rates are high in other developing economies, Ghana's relative competitiveness is unchanged.



High interest rates may also have benefits. They encourage saving, which helps to close the savings gap; according to the Harrod-Domar model, higher savings increase the funds available for investment, so credit may become more available in the long run. Controlling inflation and stabilising the cedi increases confidence and FDI, which may

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raise long-run growth more than low rates would. The effect on growth depends on the level of spare capacity: if the economy is near full capacity on the Keynesian LRAS, lower AD mainly reduces inflation rather than output. The magnitude of the change also matters, and time lags of up to two years mean the effects are uncertain.

In conclusion, high interest rates in Ghana reduce investment, business start-ups and growth at the micro level and reduce AD and future LRAS at the macro level, but they help to control inflation and exchange rate volatility. Because many Ghanaians are outside the formal credit system, their impact is weaker than in developed countries, and the long-run effect depends on whether stability encourages enough saving and FDI to offset the higher cost of borrowing.

Question 2(e)

The African Continental Free Trade Agreement (AfCFTA) is a free trade area, a trading bloc in which member countries remove tariffs and other trade barriers between themselves but keep their own tariffs on non-members. It covers all 55 member states of the African Union, 1.2 billion people and a combined GDP of more than $2 trillion, and commits countries to removing tariffs on 90% of goods (Extract F).

At a microeconomic level, removing tariffs lowers the prices of goods imported from other African countries. As the diagram shows, when the tariff is removed, the price falls from Pw + T to Pw, domestic demand rises from Q3 to Q4, and consumer surplus increases, giving consumers more choice and variety. Ghanaian firms gain access to a much larger market, so they can expand output and benefit from economies of scale, lowering average costs and increasing profits. Chocolate makers could import sugar and milk tariff-free from other African countries, reducing the high cost of imported inputs (Extract E). Tackling non-tariff barriers such as long delays at borders reduces firms' costs further. Greater competition from African firms gives domestic firms an incentive to become more efficient and innovate, and there may be technology and skills transfer.

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Workers benefit from more employment opportunities as firms expand.

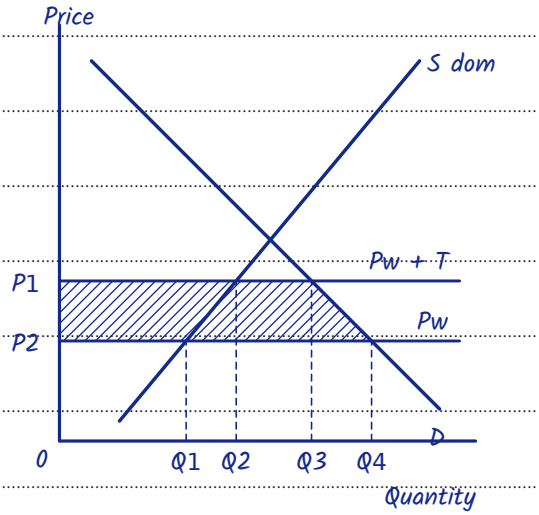
At a macroeconomic level, trade creation occurs as higher cost domestic production is replaced by lower cost imports from other members, allowing Ghana to specialise according to comparative advantage, for example in cocoa processing. Higher exports are an injection that shifts AD to the right with a multiplier effect, raising real GDP, reducing unemployment and increasing tax revenue from incomes and profits. Liberalising services widens opportunities in finance and telecommunications. Transnational companies may increase FDI in Ghana to use it as a base to serve the whole African market, especially in enterprise zones, which would increase capital inflows and shift LRAS to the right. Higher incomes could reduce poverty and relative inequality, and as part of a large bloc Ghana gains greater weight in trade negotiations with the EU and others.

However, the gains depend on how much Ghana trades with Africa. Intra-African trade is still relatively small, and Ghana mainly exports its cocoa beans outside Africa, to chocolate producers such as Germany and Belgium (Figure 3), so the effect on its main export may be limited. Domestic firms may lose out to larger, more powerful firms and TNCs from Nigeria and South Africa, causing job losses and structural unemployment in uncompetitive industries, and the government loses tariff revenue. Some trade diversion may occur if cheaper goods from outside Africa are replaced by higher cost imports from members, although this is less likely in a free trade area than in a customs union with a common external tariff.

The benefits also depend on the ability to address infrastructure difficulties, such as poor roads and the inconsistent energy supply in rural Ghana, which raise costs whatever the tariff. Tariffs on the remaining 10% of goods are only phased in later, so the gains are long run. Larger economies may have the greatest say in negotiations, limiting Ghana's decision making. The effect on growth depends on spare capacity: with high unemployment and low incomes, higher AD should raise output rather than inflation.

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In conclusion, joining the AfCFTA should benefit Ghana through lower prices, economies of scale, cheaper inputs and FDI, which supports its plans for industrialisation. However, the gains are likely to be modest in the short run because intra-African trade is small and infrastructure is weak, so the long-run benefit depends on whether Ghana can use the larger market to process more of its own cocoa.



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TOTAL FOR SECTION B = 50 MARKS
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