Surname	StemUp Model Solution	Centre Number	Candidate Number
First name(s)			2

GCE A LEVEL

S24-1520U30-1

1520U30-1

WEDNESDAY, 22 MAY 2024 – AFTERNOON

ECONOMICS – A2 unit 3
Exploring Economic Behaviour

2 hours

	For Examiner's use only		
	Question	**Maximum Mark**	**Mark Awarded**
Section A	**1.**	**8**	
	2.	**7**	
	3.	**8**	
	4.	**6**	
	5.	**11**	
Section B	**6.**	**10**	
	7.	**8**	
	8.	**10**	
	9.	**12**	
	Total	**80**	

1520U301
01

ADDITIONAL MATERIALS

In addition to this paper you may require a calculator and a ruler.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet. If you run out of space, use the additional page(s) at the back of the booklet, taking care to number the question(s) correctly.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the necessity for good English and orderly presentation in your answers.

© WJEC CBAC Ltd.

stemup.co.uk

Examiner only

SECTION A

Answer **all** questions in the spaces provided.

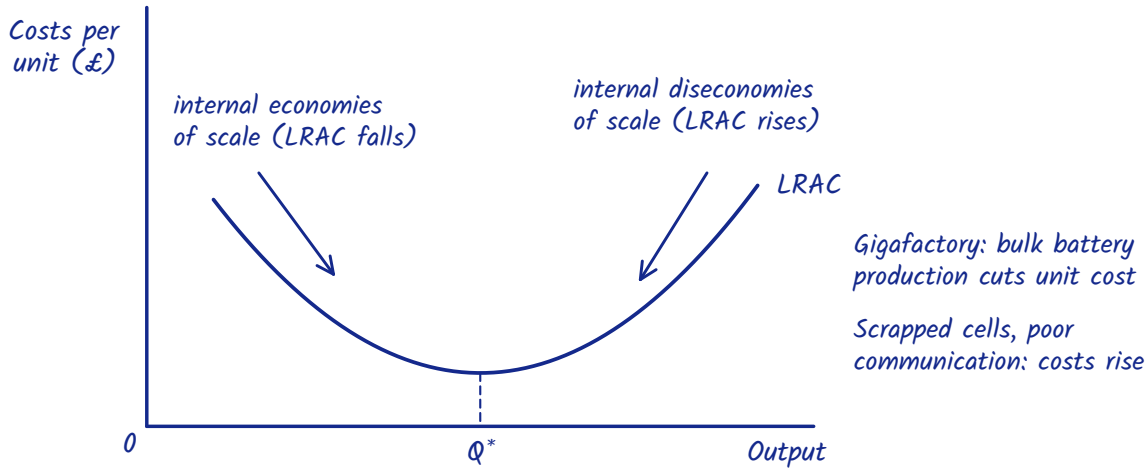
1. In 2019, the Californian electric car company Tesla announced that it wanted to scale up its production volumes in order to achieve economies of scale. Tesla would then be able to reduce the sale price of its Model 3 car and increase the number of electric cars on the roads. The largest cost faced by Tesla is production of its special lithium batteries, which account for a huge 42% of the retail price of the car. Tesla has built a large specialist battery factory in the state of Nevada, which it calls its Gigafactory, in order to try and reduce the unit cost of batteries.

The building of the Gigafactory has led the Nevada state government to improve motorways and increase capacity on the railway lines. In turn, this has led to other firms, such as Apple and Walmart, setting up production and distribution facilities in the area.

However, a report suggested that the Tesla Gigafactory has to scrap around half a million battery cells every day because of mistakes in production. This was caused by employee carelessness, poor communication regarding production processes and employee stress as a result of pressure from Tesla's owners to increase output.

(a) Using a diagram and with reference to the data, outline the difference between internal economies of scale and internal diseconomies of scale. [4]

Draw your diagram in the space below.



Internal economies of scale: LRAC falls as the firm itself grows, up to Q*. Tesla's Gigafactory mass-produces lithium batteries (42% of the car's retail price), cutting the unit cost of each battery.

Internal diseconomies of scale: LRAC rises as the firm grows beyond Q*. Tesla scraps half a million battery cells a day due to careless, stressed staff and poor communication, raising unit costs.

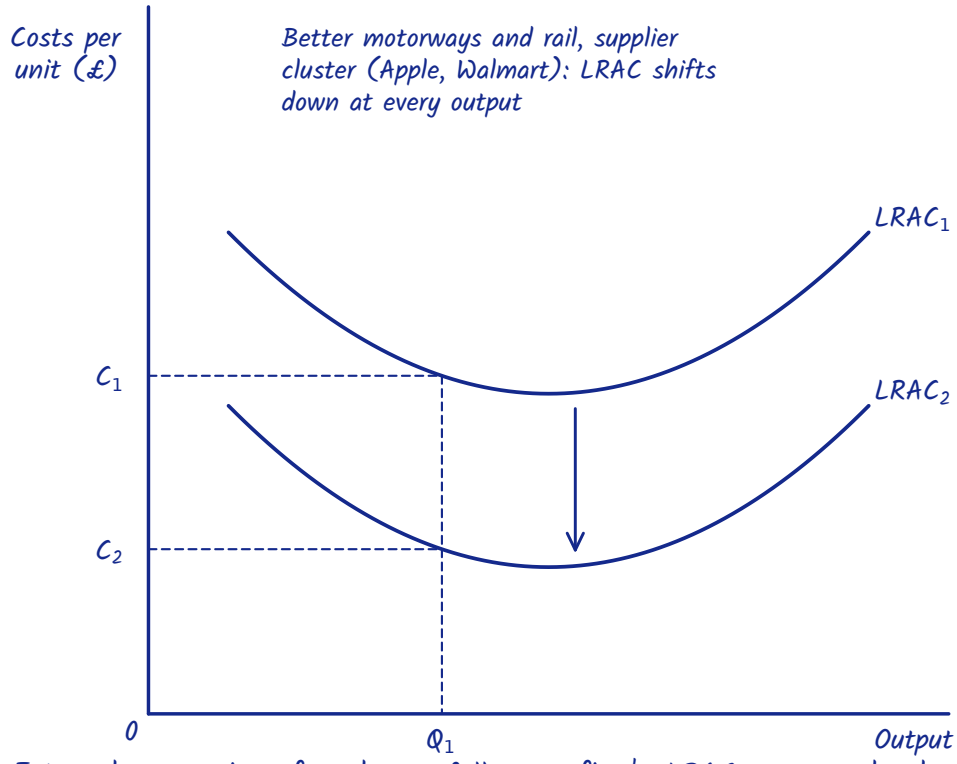
© WJEC CBAC Ltd.

stemup.co.uk

Examiner only

(b) Using a diagram, outline how Tesla might benefit from external economies of scale in Nevada. [4]

Draw your diagram in the space below.



External economies of scale are falls in a firm's LRAC at every level of output caused by growth of the industry or area as a whole, outside the firm, so $LRAC_1$ shifts down to $LRAC_2$.

The Gigafactory led the Nevada government to improve motorways and increase railway capacity, and attracted Apple and Walmart to the area. Better roads and rail cut journey times, congestion and supply chain delays, so Tesla spends less on drivers' wages and fuel per car and productivity rises; a cluster of firms also attracts specialist suppliers and skilled labour. At output Q_1 average cost falls from C_1 to C_2, so Tesla can cut the Model 3's price or earn more profit.

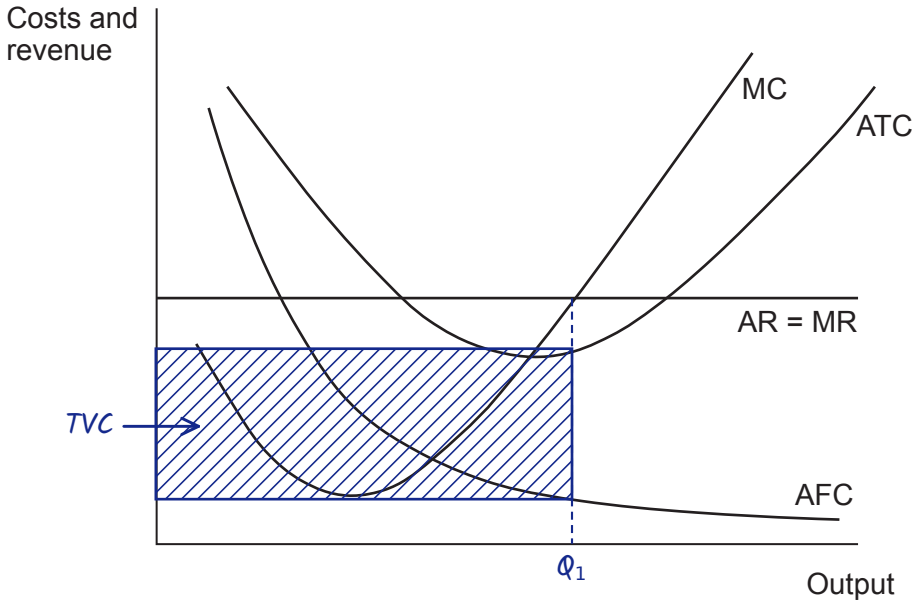
8

© WJEC CBAC Ltd.

stemup.co.uk

Examiner only

2. The diagram below represents a profit-maximising firm operating in a perfectly competitive market structure.



(a) On the diagram, indicate the level of output produced by this firm. [1]

(b) Shade the area that represents the firm's total variable costs of production. [2]

(c) Explain what will happen to this firm's level of output in the long run. [4]

In perfect competition there are no barriers to entry and firms have perfect information. At its profit-maximising output (MC = MR) this firm's AR is above its ATC, so it earns supernormal (abnormal) profit. This attracts new firms into the market, so market supply shifts right and the market price falls. As a price taker, the firm's AR = MR line shifts down, so the new MC = MR point is lower down the MC curve and the firm's output falls. Entry continues until price equals minimum ATC and only normal profit is made, so in the long run the firm produces a lower output, at the bottom of its ATC curve.

7

© WJEC CBAC Ltd.

stemup.co.uk

Examiner only

3. Angola is the 7th largest country in Africa, located on the African continent's west coast. Angola suffered a long-running civil war, which ended in 2002. It is now a relatively stable country, although its citizens have some of the lowest living standards in the world. GDP per person is around $1950 per year and its HDI value is 0.586. Income and wealth distribution is highly unequal. Angola's mineral and oil reserves are extremely large, and it is one of the fastest growing economies in the world.

The Government of Angola recently decided to part-privatise a number of its state-owned enterprises in order to improve efficiency. Some of the enterprises selected for privatisation include:

- Angola Telecom,
- TAAG (the national airline),
- Sonangol (the national oil company).

However, the Angolan Government faces challenges in the privatisation process. Angola's financial markets are undeveloped, and so issuing shares and trading them is problematic. Furthermore, business transparency and accounting standards are weak, which deters foreign investors.

Evaluate the view that Angola's privatisation programme is likely to be successful. [8]

Privatisation transfers state-owned enterprises (SOEs) to private owners. It could succeed because the profit motive gives owners an incentive to cut X-inefficiency and innovate, so TAAG and Angola Telecom may become more productively and dynamically efficient. Angola is poor (GDP per person about $1950, HDI 0.586), so running SOEs has a high opportunity cost: sale revenue and fewer subsidies free funds for health and education without raising taxes. As one of the fastest growing economies with huge oil and mineral reserves, Angola could attract FDI and portfolio investment into Sonangol, bringing capital, technology and management skills. However, Angola's financial markets are undeveloped, so issuing and trading shares is problematic, and weak transparency and accounting standards deter foreign investors. With few bidders, the SOEs are likely to be undervalued, so the government receives less than they are worth. As income and wealth are highly unequal, only the rich can buy shares, widening inequality. If foreigners buy them, profits leave Angola as primary income, worsening the current account and weakening the currency. Weak governance worsens the principal-agent problem, so managers may not be held to account, and Angola Telecom or Sonangol could become private monopolies that raise prices or ignore negative externalities.

© WJEC CBAC Ltd.

stemup.co.uk

Examiner only

On balance, success depends on regulation and institutions. As only part-privatisation, the state keeps some control, and gains are likelier in competitive markets such as airlines than in natural monopolies. In the short run weak capital markets and poor transparency make success unlikely unless Angola first strengthens its financial markets and regulators.

8

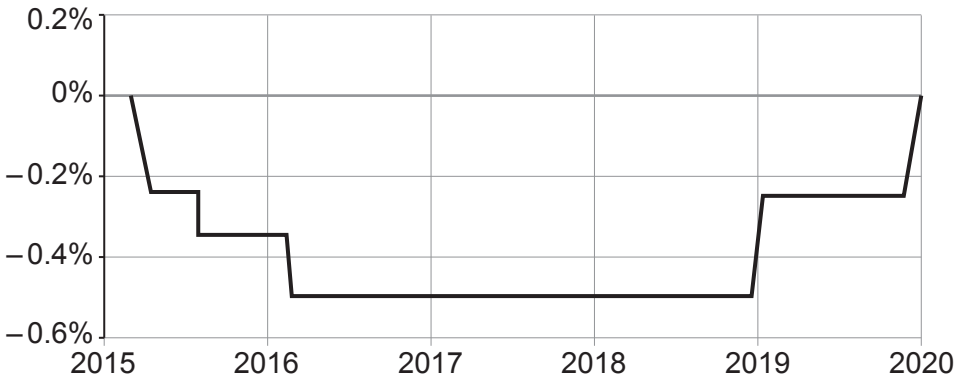
© WJEC CBAC Ltd.

stemup.co.uk

Examiner only

4. In 2015, Sweden's central bank took the unusual step of lowering its base rate of interest below 0% because it was concerned about the risk of deflation.

Figure 1: Sweden's base rate of interest 2015–2020



Analyse the likely impact of negative interest rates on aggregate demand in Sweden. [6]

A negative base rate means banks are charged for holding money at the central bank, so savers may pay to save while borrowers pay very little for loans. Figure 1 shows Sweden's rate cut below 0% in 2015, to −0.5% from 2016 to 2019, rising to −0.25% in 2019 and 0% by 2020.

Consumption: less reward for saving and cheaper credit encourage borrowing; lower mortgage costs raise disposable income and house prices (wealth effect), so C rises.

Investment: a lower cost of borrowing makes more projects profitable, so firms borrow to buy capital and I rises.

Government: savers switch into bonds, raising bond prices and lowering yields, so the government borrows more cheaply and G may rise.

Net exports: with higher rates abroad, hot money leaves and the krona depreciates; exports become more price competitive and imports dearer, so (X − M) rises.

As AD = C + I + G + (X − M), AD shifts right, raising real GDP and the price level and reducing the risk of deflation, unless banks fail to pass on negative rates.

6

1520U301
07

© WJEC CBAC Ltd.

stemup.co.uk

5. Germany is part of the euro area, and so its monetary policy is managed by the European Central Bank (ECB). The ECB has an inflation target of 2%, based on the Consumer Prices Index (CPI).

Figure 1: CPI inflation rate for Germany 2017–2023

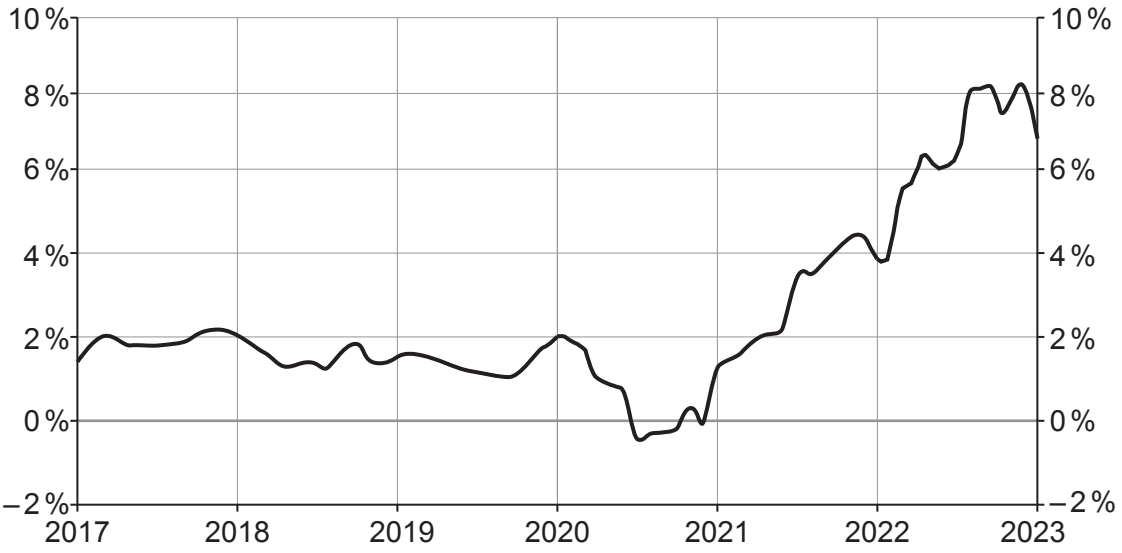


Figure 2: German annual inflation rate for selected product categories, March 2022 to March 2023

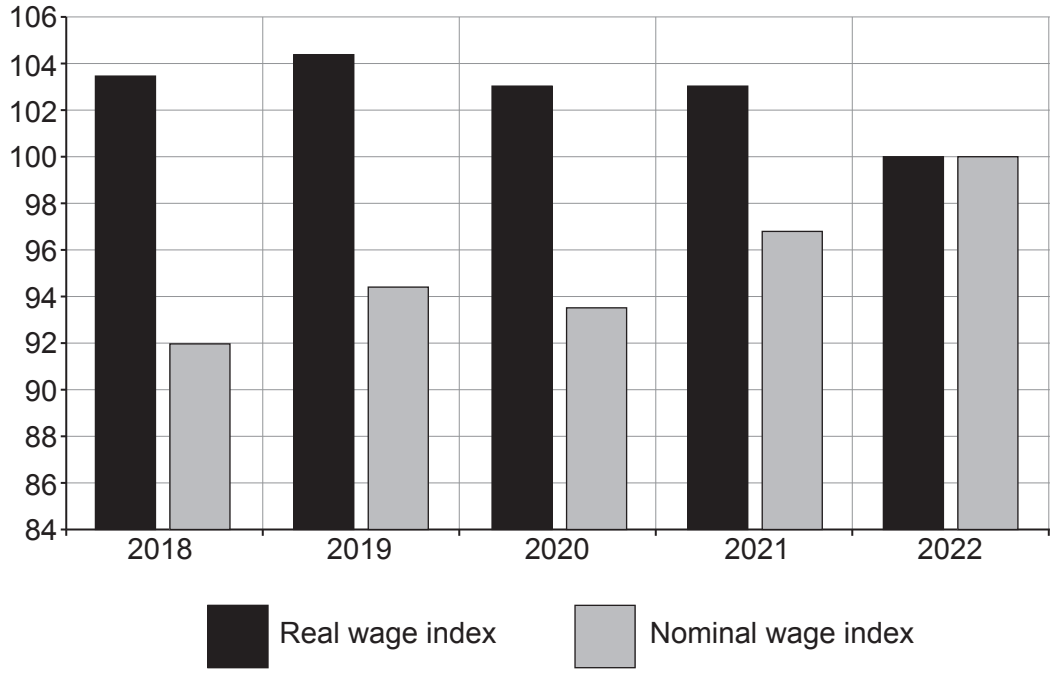
	Food	Household energy	Consumer goods	Clothing	House rent prices	Motor vehicle fuel
Annual inflation rate	22.3%	21.9%	11.9%	5.1%	2.1%	–16.9%
Weighting (% of spending)	24	28	12	8	22	6

© WJEC CBAC Ltd.

stemup.co.uk

Examiner only

Figure 3: Index of real and nominal average wages in Germany, 2018–2022 (2022 = 100)



(a) Using the data in **Figure 2**, calculate a price index for Germany in March 2023, taking March 2022 as the base period.
You are advised to show your working. [3]

Weighted % change = Σ(inflation × weight) ÷ Σweights

= [(22.3×24)+(21.9×28)+(11.9×12)+(5.1×8)+(2.1×22)+(−16.9×6)] ÷ 100

= (535.2 + 613.2 + 142.8 + 40.8 + 46.2 − 101.4) ÷ 100 = 1276.8 ÷ 100 =

12.768%

Price index, March 2023 (March 2022 = 100) = 100 × 1.12768 = 112.8 (1 d.p.)

1520U301
09

© WJEC CBAC Ltd.

stemup.co.uk

Examiner only

(b) Assess whether Germany is likely to experience a wage-price spiral. [8]

A wage-price spiral occurs when rising prices lead workers to demand higher nominal wages to protect real incomes; higher wages raise firms' costs, shifting SRAS left (cost-push inflation), so prices rise again and workers demand still more.

Germany is at risk. Figure 1 shows CPI inflation rising from around the ECB's 2% target in mid-2021 to about 8% to 9% in late 2022. Figure 2 shows necessities with price inelastic demand rising fastest: food by 22.3% and household energy by 21.9%, together 52% of spending, so households cannot avoid them. Figure 3 shows the real wage index falling from about 103 in 2021 to 100 in 2022 (about 3%), so workers have lost purchasing power and will bargain hard, and nominal wages are already rising, from about 97 to 100 in 2021 to 2022 and about 8 points since 2018. If firms pass these costs on, the spiral begins.

However, nominal wages have risen far less than prices (about 3% against 12.8% in my index), so wages are following inflation rather than driving it. Motor fuel prices fell by 16.9% and energy shocks may reverse. The ECB's credible 2% target, met for most of 2017 to 2021, anchors expectations, and the ECB can raise interest rates to cut AD; some argue inflation is a monetary rather than a cost-push problem.

Overall, a spiral is possible if high inflation persists and unions win large pay rises, but it depends on the ECB acting quickly; with real wages still falling, wages are not yet chasing prices, so a full spiral seems unlikely.

11

© WJEC CBAC Ltd.

stemup.co.uk

BLANK PAGE

PLEASE DO NOT WRITE ON THIS PAGE

© WJEC CBAC Ltd.

stemup.co.uk

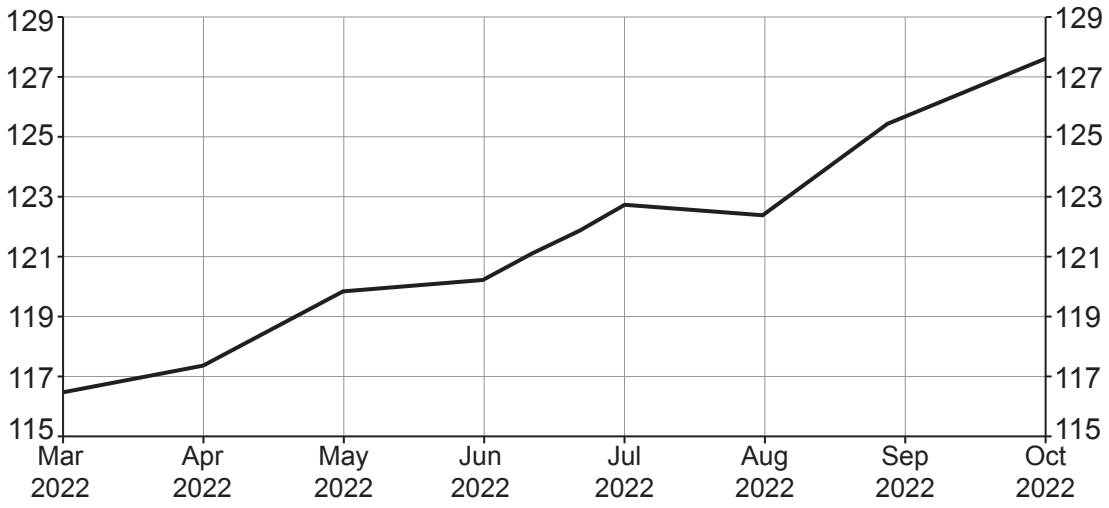
SECTION B

Answer **all** questions in the spaces provided.

Rising US dollar spells trouble for Ghana

The US dollar strengthened significantly during 2022 (**Figure 1**).

Figure 1: Effective exchange rate index for the US dollar (2007 = 100)



The dollar appreciating, meant that other currencies around the world depreciated. These depreciations were often greatest in developing economies already struggling with other issues. For example, in Ghana, a west African coastal country, the cedi (Ghana's currency) depreciated sharply against the dollar in 2022 and, although it recovered a little towards the end of the year, it was still 50% weaker than in 2019.

A depreciating currency creates problems for countries such as Ghana, which often have to borrow in dollars. Ghana's national (public sector) debt in 2022 was over 80% of GDP, and 70% of government tax revenue was spent on paying interest on this debt.

Firms in Ghana have suffered because their imported raw materials and components are often priced in dollars. Global instability has increased dollar prices of imported inputs (**Table 1**). With the cedi weakening at the same time, Ghanaian firms' costs have risen sharply. This has forced firms to increase prices, which in turn has resulted in fewer sales and falling profits.

© WJEC CBAC Ltd.

stemup.co.uk

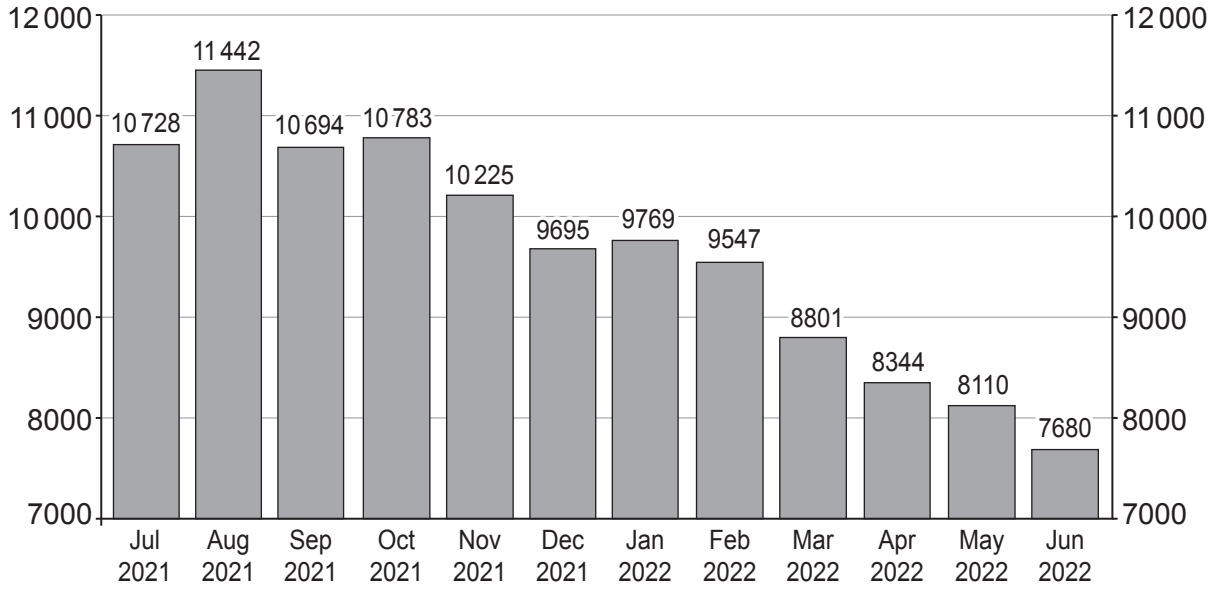
Table 1:

Prices of selected Ghanaian imports 2019–2022 (US$/tonne)		
Commodity	**2019 price**	**2022 price**
Palm oil	$524	$794
Rice	$396	$426
Rolled steel	$400	$799
Wheat	$163	$346

The depreciating cedi has therefore created policy difficulties for Ghana. If the government does nothing then nervous investors may switch their funds to safer destinations. In 2021, Ghana received net capital inflows of over US$4bn. By mid 2022, however, over US$2bn had been sent abroad, with these outflows getting larger each month.

In order to strengthen the cedi, the Ghanaian authorities could increase interest rates (which were 27% at the end of 2022). Further increases in order to control inflation could reduce investment and economic growth, both essential for development and government finances. Alternatively, the central bank could intervene by using foreign currency reserves to support its currency. For Ghana however, the need to use dollars elsewhere has meant that their currency reserves have fallen steadily in recent years (**Figure 2**).

Figure 2: Ghana's foreign exchange reserves (US$ million)



© WJEC CBAC Ltd.

stemup.co.uk

It could be argued that Ghana's weaker currency would be good for its current account. However, in the long term, the impact might not be beneficial because exports from developing economies are often priced in dollars, meaning that prices don't fall for overseas buyers. Nevertheless, Ghana's current account deficit has remained relatively low because of higher global oil, gold and cocoa prices; these goods contribute 75% of total export earnings for Ghana.

As a result of its exchange rate difficulties, Ghana has sought a loan from the International Monetary Fund (IMF) for the 17th time since the 1960s, with agreement reached for a US$3bn bailout package. According to the IMF, the loan "aims to restore macroeconomic stability and debt sustainability while laying the foundation for stronger and more inclusive growth."

IMF loans usually come with numerous conditions attached. Consequently, many Ghanaians fear that this agreement with the IMF will force their government to impose austerity measures (increases in tax and cuts in government spending) that will further damage the living standards of Ghanaian citizens, who are already facing soaring prices and other economic problems (see **Table 2**).

Table 2

Selected development indicators			
	Ghana (a lower middle income country)	**Lower middle income countries – average†**	**Upper middle income countries – average†**
Life expectancy at birth (years)	63.8	66.4	75.3
Adult literacy (%)	79.04	75.43	95.45
Access to electricity (% of population)	85.9	89.8	99.4
Enrolment in university level education (% of population)	16.2	23.1	46.9
Access to clean water (% of population)	71.9	84.3	90.9
Internet access (% of population)	58	44.9	73.4

† Lower middle income countries are those with GNI/capita between $1000 and $4000. Upper middle income countries are those with GNI/capita between $4000 and $12 500 (approx.).

© WJEC CBAC Ltd.

stemup.co.uk

Some have argued that Ghana needs a national industrialisation plan to develop its manufacturing sector with links to agriculture, particularly cocoa. Developing import-substitution and export-driven industries based on its comparative advantages could improve the country's trade balance and government revenue.

Ghana's government has argued that the challenging external environment has left it no choice other than to look for help from the IMF, but critics have argued that the current president once promised a "Ghana without aid." Critics also argue that many of Ghana's problems are self-inflicted; Ghanaian governments have a history of running large fiscal/budget deficits, particularly in election years. According to some commentators, this deficit is made worse by public sector financial irregularities and widespread tax breaks for large corporations. Likewise, although inflation has been driven up by external events, this increase was from an already high base, with inflation rarely having fallen below 10% in the last decade. Again, some hold the government to blame. Regardless of where the blame lies, Ghana faces major challenges in the coming years.

© WJEC CBAC Ltd.

stemup.co.uk

Examiner only

6. (a) (i) Using the data in **Table 1**; calculate the percentage change in the **dollar** price of palm oil between 2019 and 2022.
You are advised to show your working. [2]

% change = (794 − 524) ÷ 524 × 100

= 270 ÷ 524 × 100 = +51.5% (1 d.p.)

(ii) 'The cedi depreciated sharply against the dollar in 2022 and, although it recovered a little towards the end of the year, it was still 50% weaker than in 2019', (lines 3-5).
Using this information and your answer to (a)(i), calculate the percentage change in the **cedi** price of palm oil between 2019 and 2022.
You are advised to show your working. [2]

The cedi is 50% weaker, so each dollar now costs twice as many cedi.

In 2019 terms the 2022 price is like paying 2 × $794 = $1588.

% change = (1588 − 524) ÷ 524 × 100 = 1064 ÷ 524 × 100 = +203%

(nearest whole number)

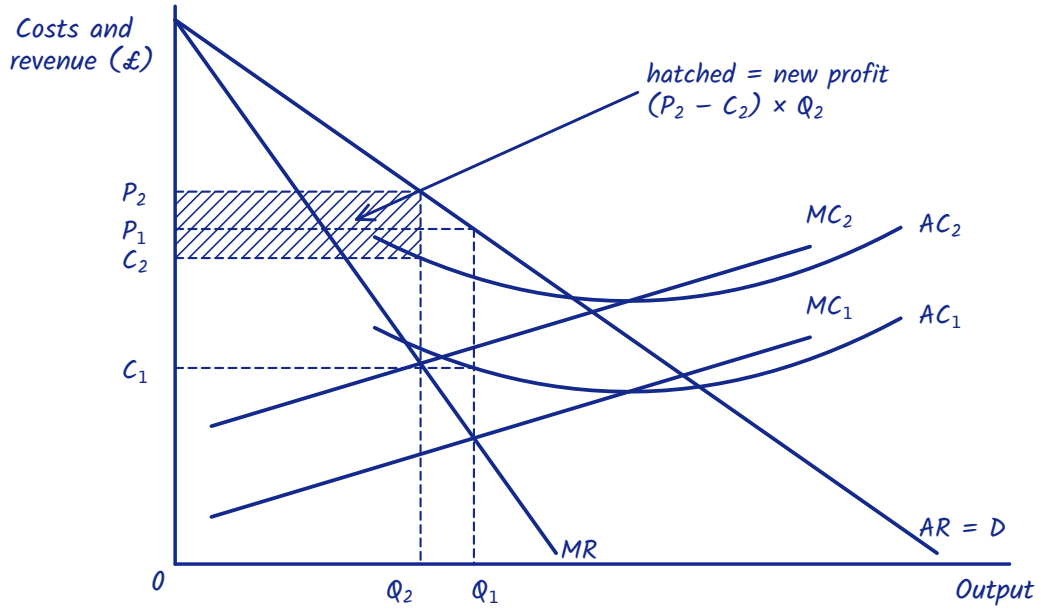
(Check: 1.515 × 2 = 3.03 times the 2019 price, a rise of 203%.)

© WJEC CBAC Ltd.

stemup.co.uk

Examiner only

(b) With reference to the data and using a cost and revenue diagram, show how the weak cedi has resulted in higher prices, fewer sales and falling profits for firms in Ghana that import commodities. [6]



Ghanaian firms that import raw materials pay in dollars. The cedi is 50% weaker than in 2019, so each dollar costs twice as many cedi, and dollar prices have also risen: Table 1 shows rolled steel up from $400 to $799 and wheat from $163 to $346 per tonne, and the cedi price of palm oil rose by about 203%. These are variable costs, so MC and AC shift up from MC_1, AC_1 to MC_2, AC_2.

The firm maximises profit where MR = MC. At first this is output Q_1, sold at price P_1 with average cost C_1, so profit is $(P_1 - C_1) \times Q_1$. After costs rise, MR = MC_2 at a lower output Q_2, so sales fall, and the firm charges a higher price P_2 on the AR curve. Average cost rises to C_2, so profit falls to the hatched area $(P_2 - C_2) \times Q_2$, as costs have risen by more than the price. This is why firms raised prices yet had fewer sales and falling profits (lines 11 to 12).

10

© WJEC CBAC Ltd.

stemup.co.uk

Examiner only

7. Evaluate the extent to which Ghana's economic difficulties in 2022 were the result of external rather than internal factors. [8]

External factors played a large role. The US dollar index rose from about 116 in March 2022 to about 128 in October (Figure 1), driven by global uncertainty and rising US interest rates, which Ghana cannot control. Hot money left developing economies: Ghana went from net capital inflows of over US$4bn in 2021 to outflows of over US$2bn by mid 2022 (lines 15 to 16). Such a rapid reversal points to world events, as internal factors do not change so quickly. Global instability also raised dollar import prices, e.g. wheat rose from $163 to $346 per tonne (Table 1). With a weaker cedi, firms' costs rose, causing cost-push inflation, falling profits and a heavier burden of dollar debt, draining reserves from $11 442m to $7680m (Figure 2).

However, internal factors made Ghana unusually vulnerable. The cedi was 50% weaker than in 2019, far more than the dollar's rise, so investors had lost confidence in Ghana in particular. Governments have run large budget deficits, especially in election years, made worse by financial irregularities and tax breaks for large corporations (lines 45 to 47), so debt exceeded 80% of GDP and 70% of tax revenue went on interest. Inflation was rarely below 10% over the last decade, so the shock hit an already high base. Lack of industrialisation leaves Ghana reliant on primary products (75% of export earnings from oil, gold and cocoa). The external environment was not wholly bad either: high oil, gold and cocoa prices kept the current account deficit low, and the IMF's aim to restore "debt sustainability" implies domestic mismanagement.

Overall, the difficulties came from a mix of both. The 2022 trigger was external, but years of internal policy failings (deficits, debt, high inflation and little diversification) turned a global shock into a crisis. Other countries faced the same strong dollar without a 17th IMF loan, so internal factors largely determined how severe the problems became.

8

© WJEC CBAC Ltd.

stemup.co.uk

Examiner only

8. Discuss whether the Ghanaian authorities should have intervened or not in the ways suggested in lines 17–22 to strengthen the cedi. [10]

Raising interest rates: higher rates attract hot money, raising demand for the cedi and strengthening it. This cuts the cedi cost of dollar debt (debt over 80% of GDP, 70% of tax revenue on interest) and of imported inputs such as rolled steel, whose dollar price doubled (Table 1), easing cost-push inflation, while lower C and I reduce demand-pull inflation, so one tool tackles two problems. A firmer cedi could also stop capital flight ($4bn net inflows in 2021 became $2bn of outflows by mid 2022), which drains the banking system of funds.

However, rates were already 27% at the end of 2022, so further rises would reduce investment and growth, both essential for development and government finances (lines 18 to 19), raise the cost of domestic debt and hit firms already suffering falling profits. Capital left despite high rates, so investors may be reacting to dollar strength and risk rather than interest differentials, and a rise could cause damage for no reward.

Using foreign currency reserves: the central bank sells dollars to buy cedi, raising its demand. This works quickly and signals that the authorities are serious, supporting a rate rise. But Figure 2 shows reserves falling from $11 442m in August 2021 to $7680m in June 2022, about a third, and dollars are needed for imports and debt payments. One central bank's firepower is small relative to the market and intervention does not change the underlying causes, so reserves could run out.

Not intervening: a weaker cedi should make exports more price competitive, improving the current account in the long run. But exports are often priced in dollars, so prices do not fall for overseas buyers, and demand for oil, gold and cocoa is price inelastic, while import costs soar.

Judgement: some intervention was justified as a falling cedi raises debt burdens, inflation and capital flight. Reserves are too low to be the main tool, so a modest,

10

© WJEC CBAC Ltd.

stemup.co.uk

Examiner only

9. With reference to the case study, discuss whether living standards in Ghana are likely to be improved by Ghana's decision to go to the IMF for financial support. [12]

Living standards depend on real income per head and on wider indicators of health, education and access to services (Table 2).

The IMF loan could raise living standards. The US$3bn package "aims to restore macroeconomic stability and debt sustainability while laying the foundation for stronger and more inclusive growth" (lines 31 to 32). Extra dollars rebuild reserves (only $7680m by June 2022), steadying the cedi and lowering the cedi price of imported food and inputs such as wheat and palm oil, so inflation falls and real incomes rise. Restored confidence could reverse the $2bn capital outflow, boosting investment, growth and jobs. With 70% of tax revenue spent on interest, lower debt costs would free funds for areas where Ghana lags lower middle income countries: clean water access 71.9% against 84.3%, university enrolment 16.2% against 23.1%, electricity 85.9% against 89.8% and life expectancy 63.8 against 66.4 years. IMF conditions on transparency could also curb financial irregularities and tax breaks for large corporations.

However, IMF loans carry conditions, and Ghanaians fear austerity: higher taxes and cuts in government spending (lines 34 to 36). Lower G reduces AD through the multiplier, raising unemployment, while higher taxes cut disposable income when people already face soaring prices; cuts to health, education and water spending could worsen the very indicators in Table 2. The IMF's free market approach may also conflict with the targeted intervention Ghana needs, such as a national industrialisation plan to process cocoa and reduce reliance on primary products (75% of export earnings). This is Ghana's 17th IMF loan since the 1960s, suggesting past loans did not bring lasting gains, and the loan adds to debt that must be repaid.

Some indicators are already good: adult literacy (79.04%) and internet access (58%) beat the lower middle income average.

© WJEC CBAC Ltd.

stemup.co.uk

Examiner only

Judgement: in the short run living standards are likely to fall as austerity and high interest rates squeeze real incomes and public services. In the long run they could improve if stability lowers inflation and interest costs, freeing funds for water, electricity and education. This depends on how harsh the conditions are, whether health and education spending is protected and, above all, on internal reform of the deficits and governance that caused the crisis; without that, a 17th loan is unlikely

12

END OF PAPER

© WJEC CBAC Ltd.

stemup.co.uk

Question number	Additional page, if required. Write the question number(s) in the left-hand margin.
8	credible rate rise backed by limited reserve use and fiscal reform is best, although it depends on how far the fall reflects dollar strength that Ghana cannot control. Earlier intervention might even have avoided the need for the IMF.
9	to raise living standards for long. IMF support is a necessary short-term lifeline, but on its own it will not transform living standards in Ghana.

Examiner only

© WJEC CBAC Ltd.

stemup.co.uk

Question number	Additional page, if required. Write the question number(s) in the left-hand margin.

Examiner only

© WJEC CBAC Ltd.

stemup.co.uk

BLANK PAGE

PLEASE DO NOT WRITE ON THIS PAGE

© WJEC CBAC Ltd.

stemup.co.uk