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 **9EC0/02**

Economics A

Advanced

PAPER 2: The National and Global Economy

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 three sections in this question paper. Answer **all** questions from Section A and Section B. Answer **one** question from Section C.
- 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

Answer ALL questions. Write your answers in the spaces provided.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

You are advised to spend 30 minutes on this section.

Use the data to support your answers where relevant. You may annotate and include diagrams in your answers.

1 After the Global Financial Crisis of 2008, the US President introduced expansionary fiscal policies of $800 billion. The International Monetary Fund estimated that the multiplier at the time was approximately 1.5.

(Source adapted from: https://www.economist.com/the-economist-explains/2016/09/07/what-is-the-keynesian-multiplier)

(a) Which **one** of the following is a withdrawal from the circular flow of income?

(1)

- ☒ **A** Exports
- ☒ **B** Government spending
- ☒ **C** Investment
- ☒ **D** Taxation

(b) Calculate the total final increase in US aggregate demand as a result of the President's 'expansionary fiscal policies', assuming no other changes.

(2)

Final increase in AD = multiplier × initial injection

= 1.5 × $800 billion

= $1,200 billion (US$1.2 trillion)

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(c) Explain the impact of annual fiscal deficits on the US national debt.

(2)

The US national debt will increase. The national debt is the total accumulated amount of money owed by the government from past borrowing.

An annual fiscal deficit means government spending is greater than tax revenue in that year, so the government must borrow money, e.g. by selling bonds, to fund this spending. Each year's borrowing is added to the stock of debt, so the $800 billion package would widen the deficit and raise the national debt, along with debt interest payments.

(Total for Question 1 = 5 marks)

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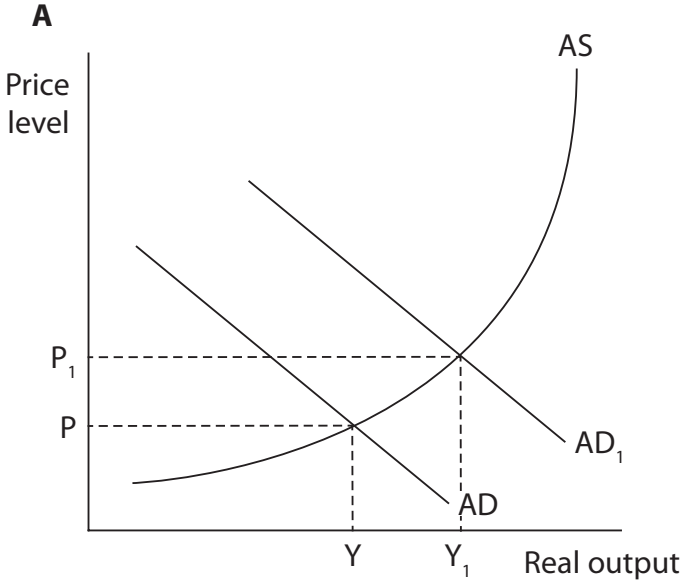
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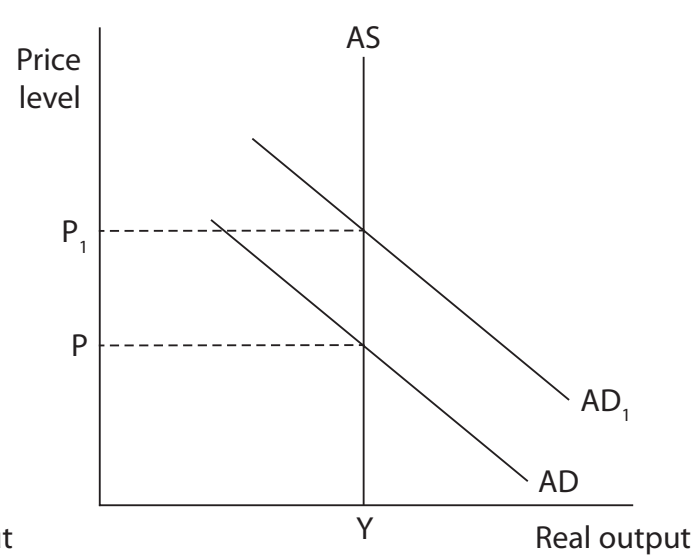
2 (a) Which **one** of the following diagrams illustrates the impact of an increase in net exports along a Keynesian long-run aggregate supply curve?

(1)

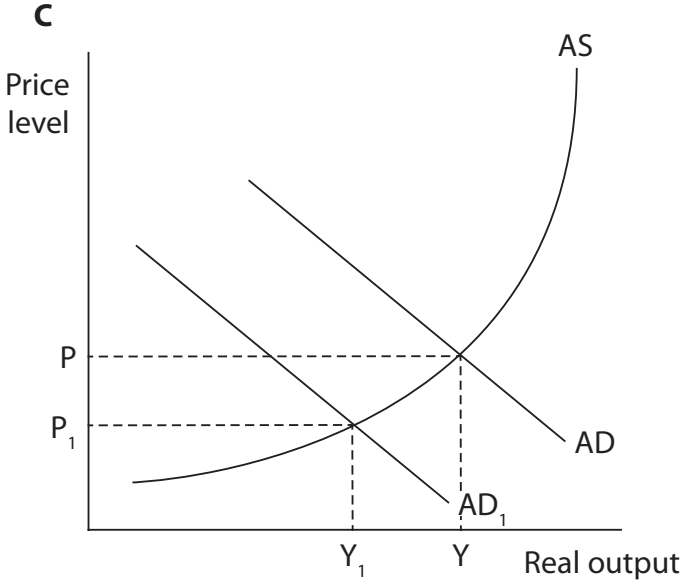
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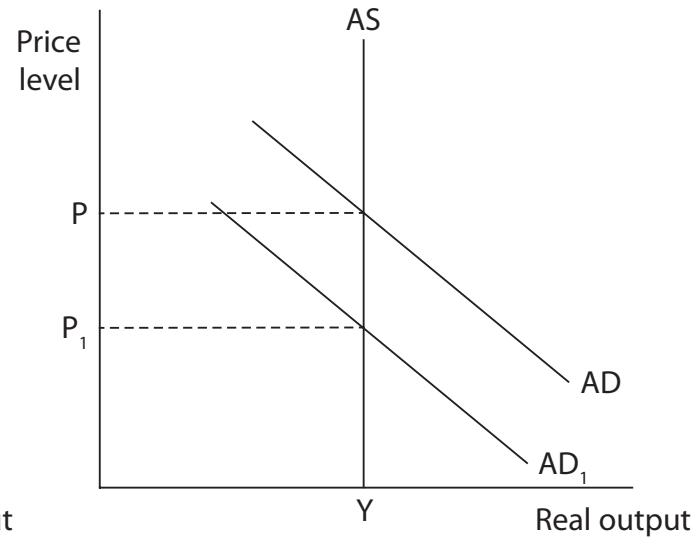
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C



D



☒ **A**

☐ **B**

☐ **C**

☐ **D**

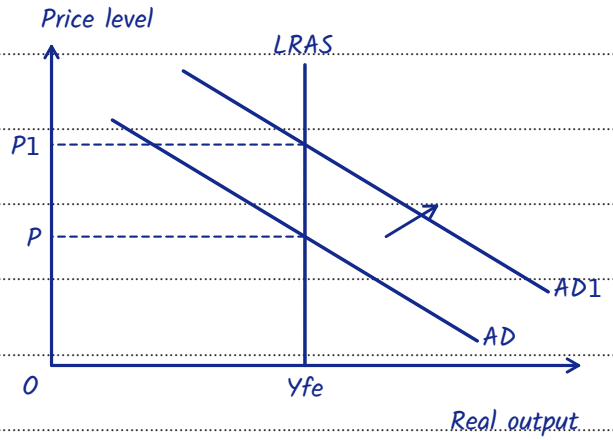
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(b) Using the classical long-run aggregate supply curve, explain what will happen in the long run to real output if aggregate demand increases.

(2)

Real output will not change in the long run: it stays at the full employment level Yfe.

Classical economists believe the economy is at full employment in the long run, so LRAS is vertical and higher AD only raises the price level from P to P1 (inflation).



(c) Explain the likely impact on aggregate demand of a fall in average house prices.

(2)

Aggregate demand is likely to fall. A fall in house prices reduces homeowners' wealth, a negative wealth effect, so consumer confidence falls and households save more and borrow less against the value of their homes.

Consumption, the largest component of AD (C + I + G + X – M), falls, so AD shifts to the left. Lower house prices may also reduce investment in house building, reducing AD further.

(Total for Question 2 = 5 marks)

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3 British pound to US dollar exchange rate (value of one pound in dollars), June 2017 to June 2019.



(Source adapted from: https://www.xe.com/currencycharts/?from=GBP&to=USD&view=2Y)

(a) Which **one** of the following has been the overall change in the British pound to US dollar exchange rate from 1st January 2018 to 1st January 2019?

(1)

- ☒ **A** Appreciation
- ☒ **B** Depreciation
- ☒ **C** Devaluation
- ☒ **D** Revaluation

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(b) Explain the likely impact of the change in the exchange rate of the pound shown in the graph from 1st January 2018 to 1st January 2019 on the UK current account of the balance of payments.

(4)

Between 1st January 2018 and 1st January 2019 the pound depreciated from about $1.35 to about $1.25, a fall of about 7%.

This makes UK exports cheaper to US consumers: a £100 UK good falls in price from $135 to $125, so UK exports become more price competitive and the volume of exports increases. At the same time, imports from the US become more expensive in pounds, so UK consumers switch to domestic substitutes and imports decrease.

With exports rising and imports falling, the UK current account deficit should improve (narrow). However, under the Marshall-Lerner condition this only happens if the sum of the price elasticities of demand for exports and imports is greater than 1. In the short run demand is inelastic, so the deficit may first worsen before improving, the J curve effect.

(Total for Question 3 = 5 marks)

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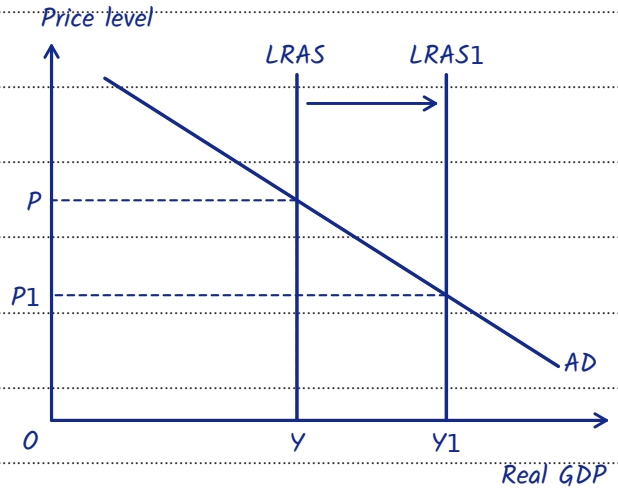
4 A number of business groups have signed an open letter to the UK Government asking it to commit to delivering the full High Speed 2 rail link. This will connect London to the northern cities of Manchester and Leeds at a cost of £56 billion and reduce journey times by as much as 50%.

(Source adapted from: https://www.theguardian.com/uk-news/2019/jun/22/business-heads-urge-next-pm-to-commit-to-finishing-hs2)

(a) Explain **one** likely impact of this project on aggregate supply in the UK.

(4)

HS2 is likely to increase the UK's long-run aggregate supply (productive capacity). The £56 billion investment improves the UK's capital stock of infrastructure. Reducing journey times by as much as 50% means people can get to work quicker and commute further, improving the geographical mobility of labour and increasing their productivity, while moving freight more quickly between London, Manchester and Leeds cuts firms' costs and increases efficiency. LRAS shifts right from LRAS to LRAS1, so potential output rises from Y to Y1 and the price level falls from P to P1.



(b) Government spending on the High Speed 2 rail link is an example of which of the following?

(1)

- ☒ **A** Automatic stabilisers
- ☒ **B** Capital expenditure
- ☒ **C** Current expenditure
- ☒ **D** Transfer payments

(Total for Question 4 = 5 marks)

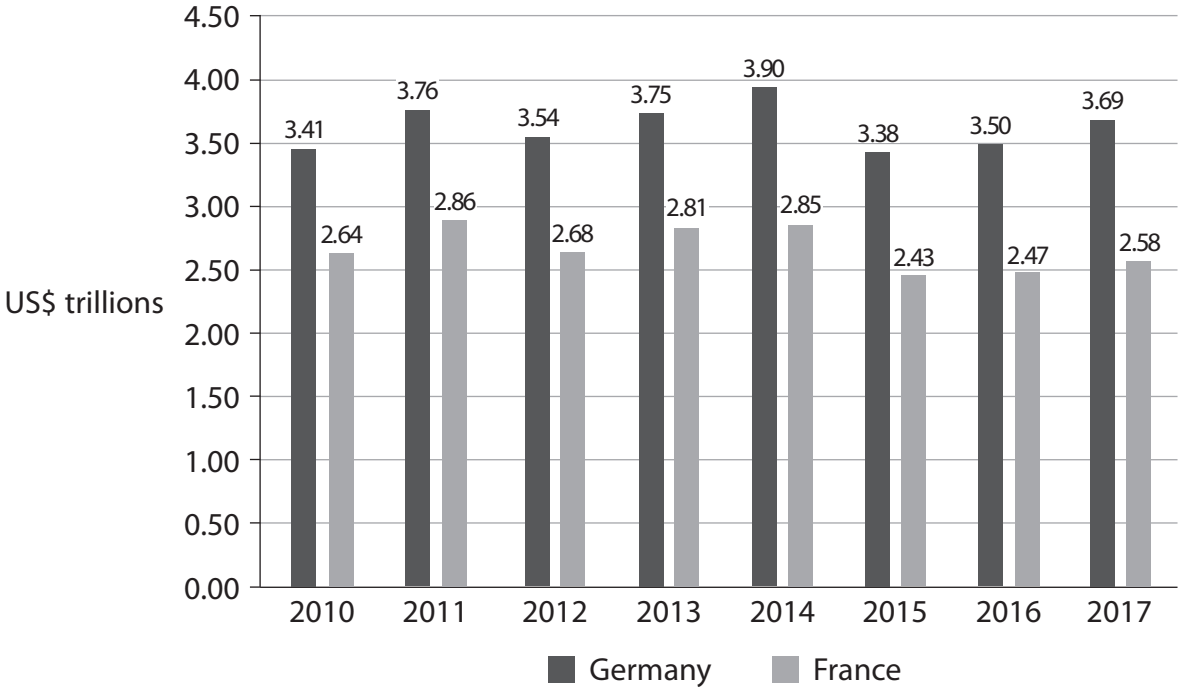
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QUESTION 5 BEGINS ON THE NEXT PAGE.

5 GDP at Purchasing Power Parities, Germany and France (nominal, trillions of US dollars) 2010–2017.



(Source: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2017&locations=DE&start=1970&view=chart)

(a) From the data in the graph above, which **one** of the following may be deduced?

(1)

- ☒ **A** France's rate of inflation was lower than Germany's in 2017
- ☒ **B** Germany's GDP is smaller than France's in every year shown
- ☒ **C** In every year that France's GDP fell compared to the previous year, Germany's GDP did too
- ☒ **D** The GDP of both Germany and France fell between 2015 and 2016

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(b) Calculate the percentage change in Germany's nominal GDP from 2016 to 2017.

(2)

% change = (change ÷ original value) × 100

= (3.69 − 3.50) ÷ 3.50 × 100

= 0.19 ÷ 3.50 × 100

= 5.4% increase (to 1 d.p.)

(c) Explain **one** reason why Purchasing Power Parities are used.

(2)

PPPs are used to improve the accuracy of comparisons of GDP and living standards between countries, such as Germany and France.

Market exchange rates do not reflect differences in the cost of living, so PPP adjusts GDP by comparing the price of the same basket of comparable goods and services in each country, showing the real purchasing power of incomes.

(Total for Question 5 = 5 marks)

TOTAL FOR SECTION A = 25 MARKS

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SECTION B

Read Figures 1, 2, and 3 and extracts A and B before answering Question 6.

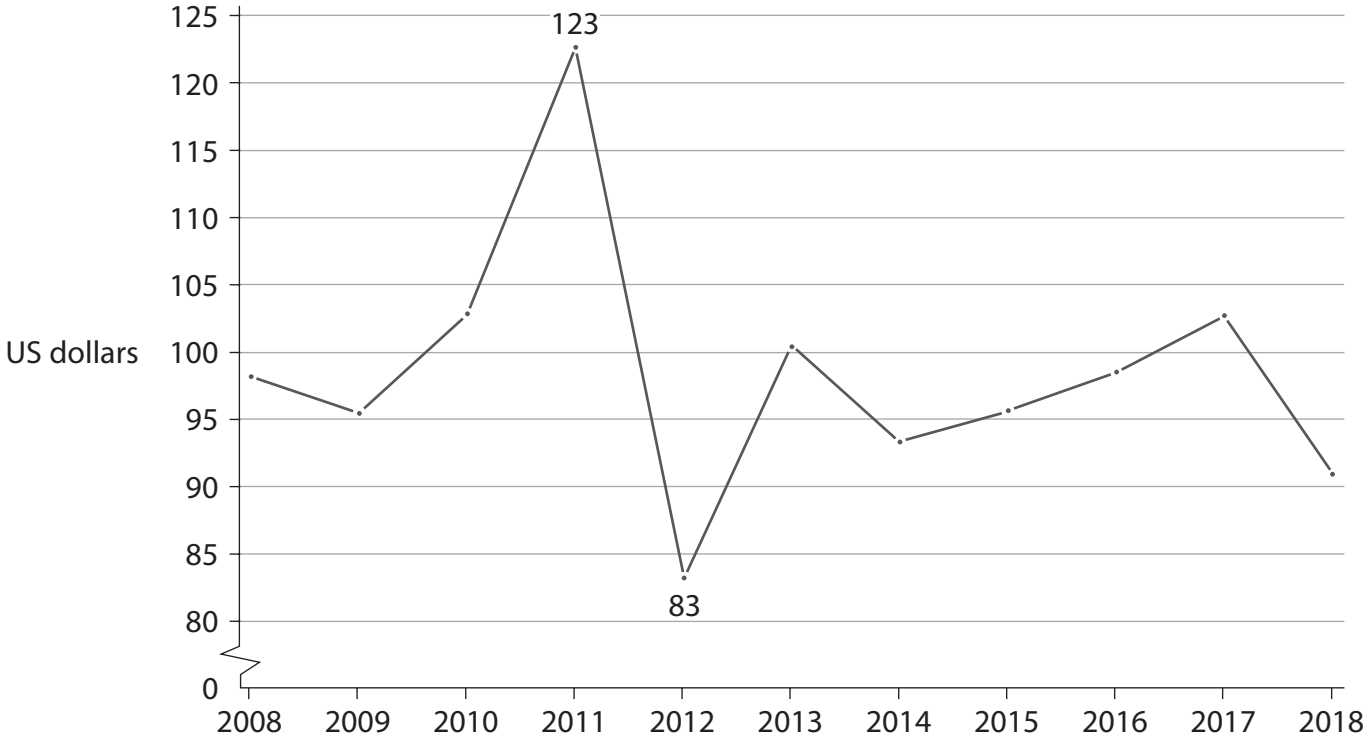
Write your answers in the spaces provided.

You are advised to spend 1 hour on this section.

Question 6

Trade and aid in Rwanda

Figure 1: Aid funding received by Rwanda (per capita, US dollars), 2008 to 2018

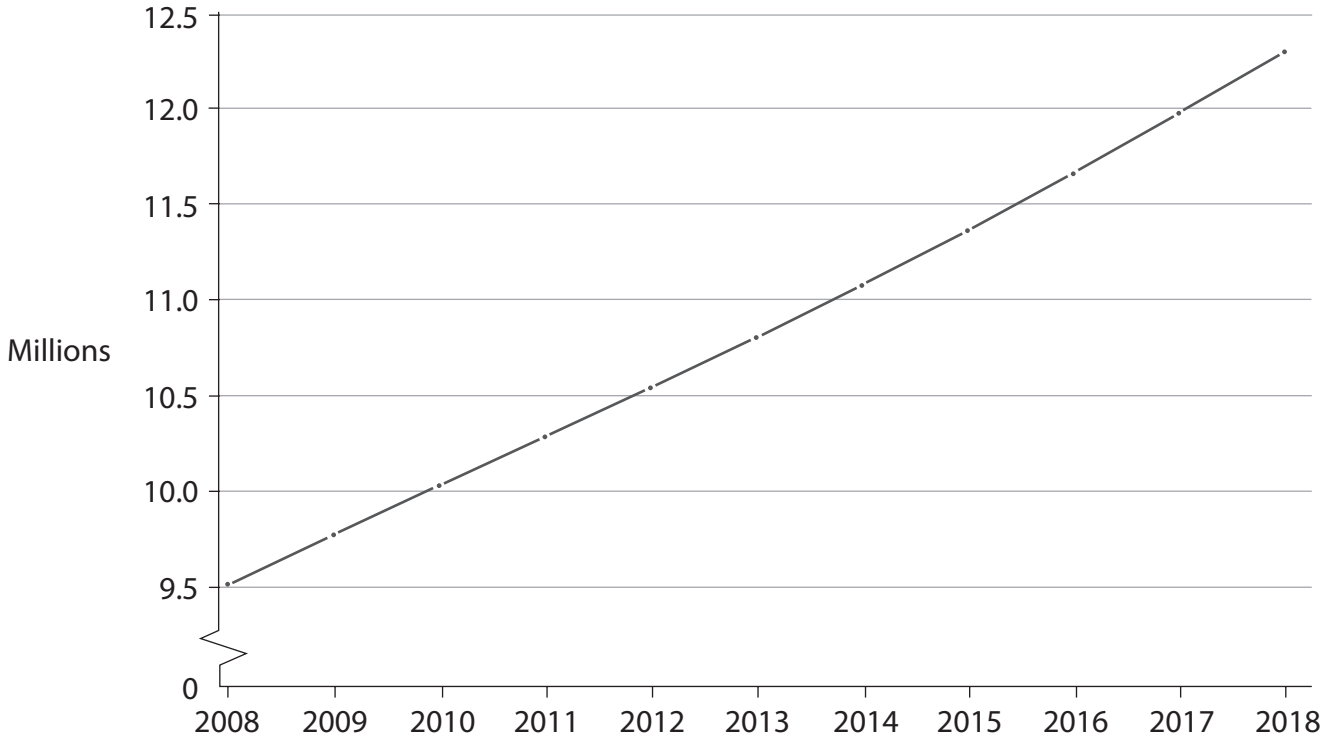


(Source adapted from: data.worldbank.org)

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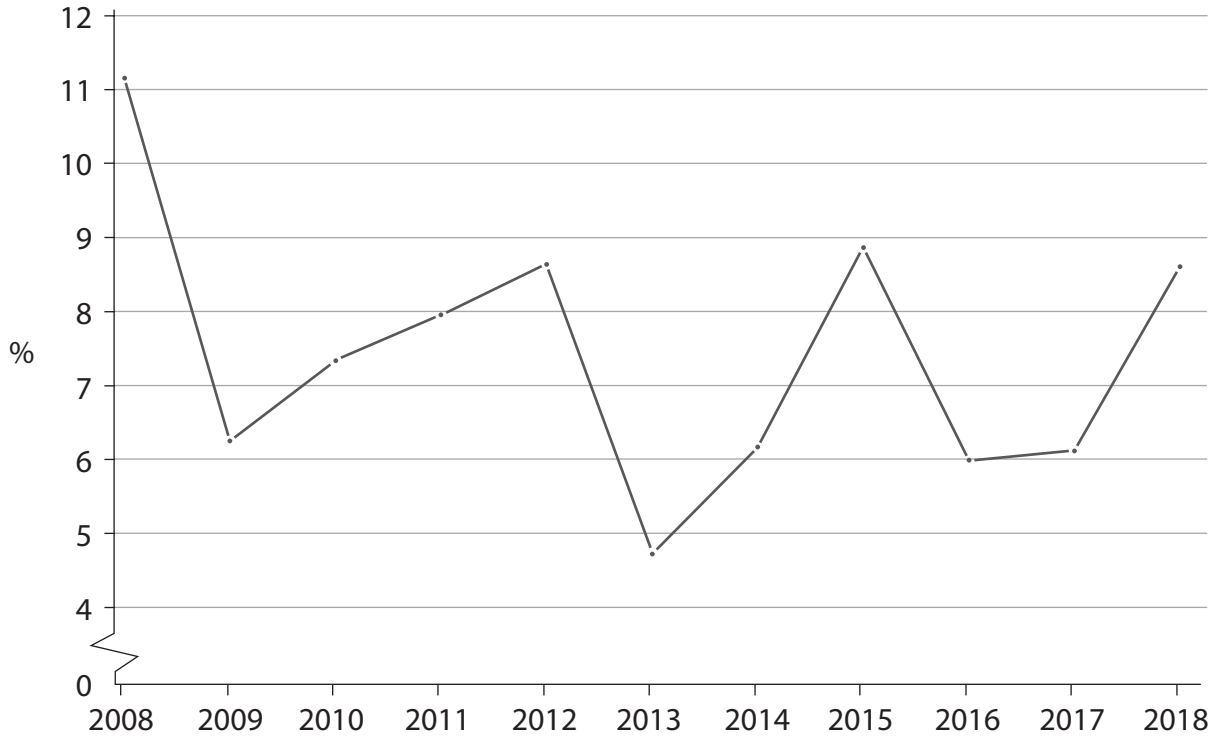
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Figure 2: Population of Rwanda (millions), 2008 to 2018



(Source adapted from: https://tradingeconomics.com/rwanda/population)

Figure 3: Rwanda real GDP annual percentage growth rate, 2008 to 2018



(Source adapted from: African Development Bank Statistics accessed April 2020)

Extract A

Rwandan tariffs on imports of used clothing

In a market in Kigali, Rwanda's capital, an auction is under way. Sellers offer crumpled T-shirts and faded jeans; traders argue over the best picks. Everything is second-hand. A Tommy Hilfiger shirt sells for 5 000 Rwandan francs ($5.82); a plain one for a tenth of that. Afterwards, a trader sorts through the purchases he will resell in his home village. The logos hint at their previous lives: Kent State University, a rotary club in Pennsylvania, Number One Dad.

These auctions were once twice as busy, but in 2016 Rwanda's government increased import tariffs on a kilo of used clothes from $0.20 to $2.50. Now many traders struggle to make a profit. The traders are not the only ones who are unhappy. Exporters in the US claim the tariffs are costing jobs there. In March, the US President warned that he would suspend Rwanda's tariff-free access to US markets for its clothing exports after 60 days if it did not remove the tariff.

Globally, about $4 billion of used clothes crossed borders in 2016. The share from China and South Korea is growing, but 70% still come from Europe and North America. Many go to Asia and eastern Europe, but Africa remains the largest market. The trade enables poor people to afford clothes and creates retail jobs. However, governments worry that the trade undercuts their own clothing manufacturers.

Second-hand imports of clothing now dominate African markets. Researchers at the Overseas Development Institute, a British think-tank, estimate that Tanzania imports 540 million used items of clothing and 180 million new ones each year, while producing fewer than 20 million itself. African manufacturing is weak for many reasons, from ineffective privatisations to collapsing infrastructure. But second-hand clothing imports are a major factor: it is estimated that they accounted for half of the fall in employment in the African clothing industry between 1981 and 2000.

For example, a clothing factory in Kigali is operating at only 40% of capacity and employs 600 workers, down from 1 100 in the 1990s. It is hard to compete, says Ritesh Patel, its manager, when a used imported T-shirt sells for the price of a bottle of water. Instead, the company specialises in uniforms for police, soldiers and security guards, which cannot be bought second-hand.

The threatened suspension of tariff-free access to the US market would hurt Rwanda, but not very much. Last year Rwanda sold just $1.5 million of clothing to the US. Nor, with about 12 million people, is Rwanda a big market for US exports.

(Source adapted from: https://www.economist.com/finance-and-economics/2018/05/31/rwanda-refuses-to-remove-tariffs-on-imports-of-used-clothing)

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Extract B

Development in Rwanda

Rwanda's strong economic growth has been accompanied by substantial improvements in living standards, with a two-thirds drop in child mortality and near-universal primary school enrolment. A strong focus on policies to encourage industrialisation and poverty reduction initiatives have contributed to significant improvements in access to services and human development indicators. Absolute poverty declined from 59% to 39% of the population between 2001 and 2014 but was almost stagnant between 2014 and 2017. The official inequality measure, the Gini index, declined from 0.52 in 2006 to 0.43 in 2017. 5

(Source adapted from: https://www.worldbank.org/en/country/rwanda/overview)

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6 (a) Using the data in Figures 1 and 2, calculate the change in the level of total aid funding to Rwanda between 2011 and 2012.

(5)

(b) With reference to the information provided, examine **two** likely benefits for the Rwandan economy of the growth in the country's population.

(8)

(c) With reference to the information provided, assess the likely impact on the Rwandan economy of the change in aid received between 2017 and 2018.

(10)

(d) Discuss the likely impact on Rwandan consumers and clothing manufacturers of the increase in the tariff on imports of second-hand clothes. Use an appropriate diagram to support your answer.

(12)

(e) Discuss policies, other than import tariffs, that the Rwandan government could use to develop its manufacturing industries.

(15)

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6 (a) Using the data in Figures 1 and 2, calculate the change in the level of total aid funding to Rwanda between 2011 and 2012.

(5)

2011: aid per capita = $123 and population = 10.29 million

Total aid 2011 = 10.29 million × $123 = $1,265.67 million

2012: aid per capita = $83 and population = 10.55 million

Total aid 2012 = 10.55 million × $83 = $875.65 million

Change = $875.65 million – $1,265.67 million

= –$390.02 million

Answer: total aid funding to Rwanda fell by $390.02 million between 2011 and 2012.

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(b) With reference to the information provided, examine **two** likely benefits for the Rwandan economy of the growth in the country's population.

(8)

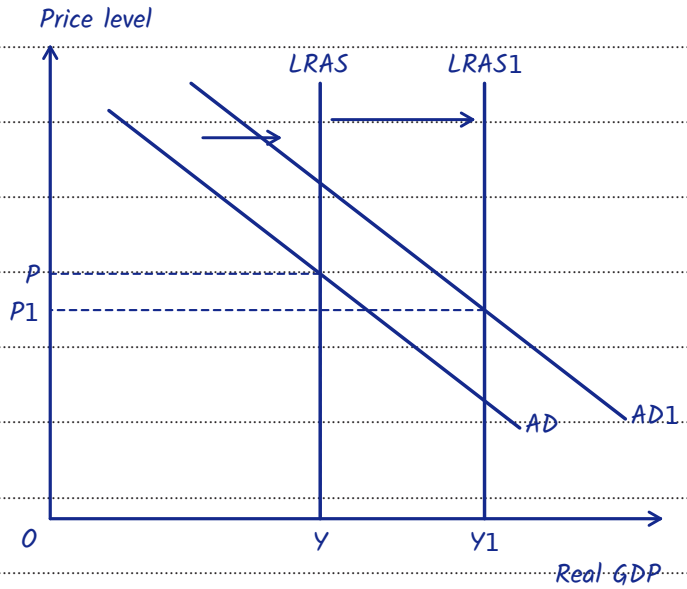
Figure 2 shows Rwanda's population grew steadily from about 9.5 million in 2008 to about 12.3 million in 2018, and from 10.8 million in 2013 to 11.4 million in 2015, an increase of about 5.6% in just two years.

The first benefit is an increase in the size of the workforce. As more people reach working age, the quantity of labour, a factor of production, increases, so Rwanda can produce more goods and services. This increases productive capacity, shifting LRAS to the right from LRAS to LRAS1, which allows higher economic growth without inflation. With near-universal primary school enrolment (Extract B), the extra workers should also be increasingly skilled and productive.

The second benefit is an increase in consumption. More people means more consumers, creating more demand for Rwandan firms, which increases aggregate demand (AD shifts right to AD1), economic output and economic growth; Rwanda's real GDP grew by almost 9% in 2015 (Figure 3). More workers and spending also increase government tax revenue, which can be spent on education and infrastructure to further improve AS and continue the fall in absolute poverty, which declined by 20 percentage points between 2001 and 2014.

However, a larger population may increase unemployment if the number of jobs does not also increase, especially as manufacturing is weak: the Kigali clothing factory now employs only 600 workers, down from 1,100. Government expenditure on providing education, healthcare and housing may also increase, cancelling out the benefits from extra tax revenue, and living standards only rise if real GDP grows faster than the population.

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(c) With reference to the information provided, assess the likely impact on the Rwandan economy of the change in aid received between 2017 and 2018.

(10)

Figure 1 shows aid funding per capita fell from about $103 in 2017 to about $91 in 2018, a fall of about $12 or 12%. With a population of about 12.0 million in 2017 and 12.3 million in 2018 (Figure 2), total aid fell from about $1,236 million to about $1,119 million, a fall of roughly $117 million.

Aid is an injection into Rwanda's circular flow of income. Less aid means less government spending and investment, so aggregate demand falls, shifting AD left from AD to AD1 in my diagram, reducing real output from Y1 to Y2 and the price level from P1 to P2. Through a negative multiplier effect, economic growth slows and unemployment may rise.

Aid also funds supply-side improvements. Less funding for education may threaten Rwanda's 'near-universal primary school enrolment', and less funding for healthcare may slow the fall in child mortality, which has dropped by two-thirds. According to the Harrod-Domar model, growth depends on the level of savings and investment; in a low-income country domestic savings are low, so aid fills the savings gap. Less aid means less investment and capital accumulation, e.g. in infrastructure, so growth in productive capacity slows.

Lower aid also means less support to lift people out of absolute poverty, so absolute poverty might not fall further than the 39% it was in 2017, having already been almost stagnant between 2014 and 2017. There may be less funding for schemes to reduce inequality, so the Gini index may not keep falling from 0.43, and the standard of living may fall. If the government tries to make up for the shortfall in aid funding by borrowing, Rwanda's budget deficit and national debt will increase.

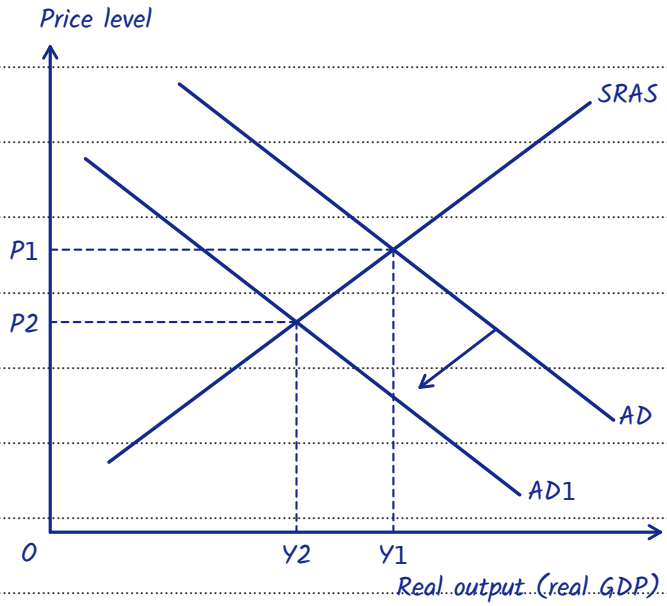
However, the significance of the fall may be limited. Aid per capita in 2018 is still above the 2012 level of $83, and Rwanda continued to grow strongly, with real GDP

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growth rising from about 6% in 2017 to about 8.6% in 2018 (Figure 3), suggesting private investment and exports may have increased over time and matter more. The fall may also be temporary: aid has fluctuated a lot and rose again after 2012, so aid money may increase the following year.

Furthermore, the decline in absolute poverty from 59% to 39% between 2001 and 2014 and near-universal primary enrolment (Extract B) suggest there is less need for aid, and the government may now be more capable of funding education and healthcare schemes from its own tax revenue as the economy grows. Aid can create dependency and be lost to corruption, so less aid may encourage more efficient use of domestic resources.

Overall, the impact is likely to be small in the short run, but if the fall in aid continues it could slow Rwanda's progress on poverty and human development.



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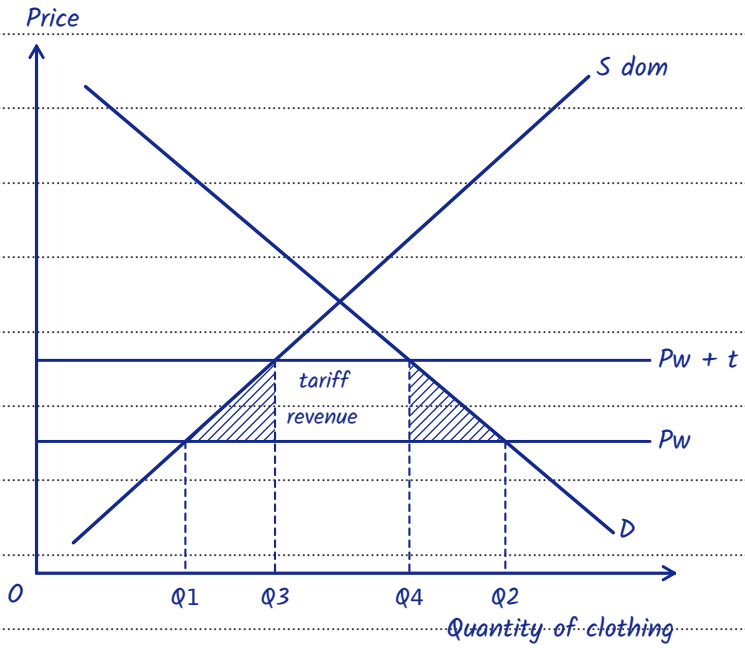
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(d) Discuss the likely impact on Rwandan consumers and clothing manufacturers of the increase in the tariff on imports of second-hand clothes. Use an appropriate diagram to support your answer.

(12)

A tariff is a tax on imports. In 2016 Rwanda raised the tariff on a kilo of used clothes from $0.20 to $2.50, an increase of over 1,100%.



In my diagram, the price of imported clothing rises from the world price Pw to Pw + t. Consumers face higher clothing prices, so the quantity demanded falls from Q2 to Q4 and consumers lose consumer surplus. Second-hand clothing allows poor people to afford clothes, with a plain shirt selling for about $0.58, so the higher price reduces real incomes and lowers the standard of living, especially for the 39% in absolute poverty. Consumers also have less choice, and traders struggle to make a profit, with auctions half as busy as before, so retail jobs may be lost.

For Rwandan clothing manufacturers, domestic supply rises from Q1 to Q3 as they can now sell at higher prices, so they gain producer surplus and increased profits, while imports fall from Q1Q2 to Q3Q4. Firms such as the clothing factory in Kigali, operating at only 40% of capacity, can use their spare capacity, lower average costs through economies of scale and employ more workers again, back towards the 1,100

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employed in the 1990s. The government gains tariff revenue (the rectangle), which can be used to subsidise clothing manufacturers or provide consumers with healthcare and education. The two hatched triangles are a deadweight welfare loss.

However, the impact depends on the price elasticity of demand for imported clothing. If demand is price inelastic, as clothes are a necessity, consumers keep buying and simply pay more, so the consumer welfare loss is large but domestic producers gain little extra demand.

The significance of the increase also matters. Even at $2.50 per kilo, used T-shirts may still be much cheaper than new domestic clothing, as a used T-shirt sells for 'the price of a bottle of water', so domestic producers may still be unable to compete with significantly cheaper used clothing imports. African manufacturing is also weak because of ineffective privatisations and collapsing infrastructure, which a tariff does not fix.

On the other hand, an increase in employment in the domestic textile industry would benefit consumers too, as more workers earn wages and incomes rise. In the long run protection may allow an infant industry to grow and become competitive. There is a risk of retaliation: the US threatened to suspend Rwanda's tariff-free access to US markets, although this would hurt Rwanda only a little, as it sold just $1.5 million of clothing to the US. Protected firms may also become inefficient, with less incentive to cut costs.

Overall, consumers, especially the poorest, are likely to lose more than manufacturers gain in the short run, unless domestic firms use the protection to become more efficient.

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(e) Discuss policies, other than import tariffs, that the Rwandan government could use to develop its manufacturing industries.

(15)

Manufacturing is weak in Rwanda: the Kigali clothing factory operates at only 40% of capacity and second-hand imports dominate African markets. Instead of tariffs, the government could use supply-side and other policies.

Firstly, the government could improve infrastructure, such as roads, railways, access to ports and reliable electricity. Rwanda is landlocked, so transport costs to reach ports such as Mombasa or Dar es Salaam are high. Better roads and investment in cheaper renewable electricity for factories reduce firms' costs, making it easier and cheaper for Rwandan firms to export their clothing and other manufactures, improving international competitiveness and shifting LRAS right. Extract A names collapsing infrastructure as a reason for weak African manufacturing.

Secondly, increased education and training spending would improve the skills and efficiency of the workforce. Rwanda already has near-universal primary enrolment, so the focus could move to secondary, technical and vocational training, raising labour productivity, lowering unit labour costs and allowing firms to move into higher value-added manufacturing.

Thirdly, the government could subsidise textile manufacturers to purchase new machinery and technology to increase efficiency. This lowers costs of production and shifts their supply curve right, so domestic firms can cut prices and compete better with imported used clothing. Grants or cheap loans could also help small firms that lack access to credit.

Fourthly, incentives to encourage FDI into Rwandan manufacturing, such as reduced corporation tax, tax breaks in special economic zones and deregulation to cut red tape and increase efficiency, would attract multinationals bringing capital, technology, management skills and access to export markets. Lower corporation tax also leaves firms

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more retained profit to invest. Rwanda could build on its tariff-free access to the US market and strong growth record, creating jobs and export earnings.

However, there is an opportunity cost of government spending: money spent on subsidies or infrastructure could have a bigger impact on the Rwandan economy if invested in other industries or used to improve public services such as healthcare, especially as aid fell to about $91 per capita in 2018. Subsidies may also create inefficiency and dependence on government support.

Rwanda should perhaps focus on industries where it has a comparative advantage, such as tourism, coffee, tea or ICT services, rather than textiles, where it cannot match the low costs and economies of scale of Asian producers, let alone used clothing selling for the price of a bottle of water. Specialising in niche products, like the uniforms made by the Kigali factory, may be more realistic.

There are also time lags: education and infrastructure projects may take many years to have any significant impact on manufacturing. There is a risk of corruption, e.g. funding for construction projects may not be spent where it was intended. A highly educated workforce may emigrate to more developed countries that offer higher wages (a brain drain). Tax incentives for FDI reduce tax revenue, and multinationals may repatriate profits or leave when incentives end.

Overall, the most effective policies are likely to be investment in infrastructure and energy alongside education, since they lower costs for all manufacturers and have lasting benefits. However, they should be targeted at sectors where Rwanda can be competitive, and their success depends on good governance, the funding available and the time allowed for them to work.

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(Total for Question 6 = 50 marks)

TOTAL FOR SECTION B = 50 MARKS

SECTION C

Answer ONE question from this section.

Write your answer in the space provided.

You are advised to spend 30 minutes on this section.

EITHER

7 The European Central Bank introduced a new round of quantitative easing (QE) in March 2020, purchasing up to €750 billion of assets. The objective of this QE was to reduce the serious risks to the effectiveness of monetary policy resulting from a significant recession. The European Central Bank's target for inflation remains at 'below but close to 2%'.

(Source adapted from: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200318_1~3949d6f266.en.html)

Evaluate the effectiveness of quantitative easing during 'a significant recession'.

(Total for Question 7 = 25 marks)

OR

8 It has been estimated that if climate change led to the world's temperature rising 2.5 °C compared to the temperature in 2010, then global GDP per capita would be 15% lower by 2100. If temperatures rise by 4 °C compared to the temperature in 2010, then by 2100 global GDP per capita would decline by more than 30%.

(Source adapted from: https://www.nature.com/articles/s41586-018-0071-9)

Evaluate the potential trade-offs between environmental protection and other macroeconomic objectives.

(Total for Question 8 = 25 marks)

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 7** ☒ **Question 8** ☒

Write your answer here:

Question 7

Quantitative easing (QE) is an unconventional monetary policy in which the central bank creates new money electronically to buy assets, mainly government and corporate bonds, from financial institutions. A significant recession is a large fall in real GDP, for at least two consecutive quarters, as in the Eurozone in 2020 when Covid-19 lockdowns closed

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many businesses.

QE was necessary as an additional monetary policy tool because the ECB had already cut interest rates as low as possible, with its deposit rate at −0.5%, and the economy had not responded. Buying up to €750 billion of assets increases demand for bonds, raising their prices and lowering their yields, so long-term interest rates fall. Commercial interest rates did not drop as much as the ECB base rate due to confidence concerns from banks, so QE acted as another way to reduce interest rates.

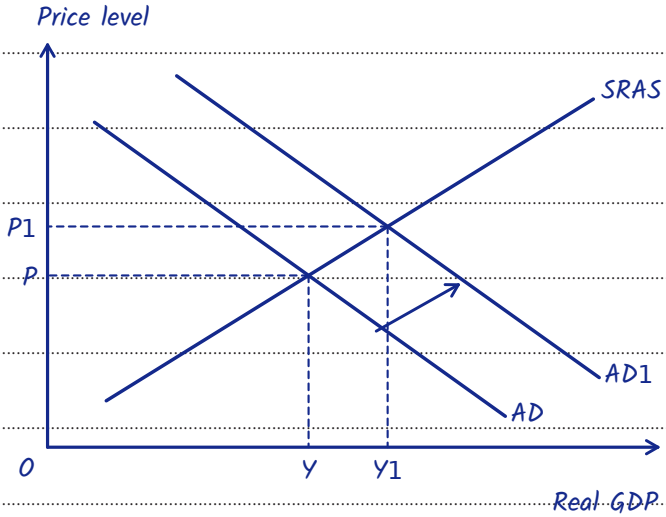
QE provides financial institutions with additional funding to allow them to increase lending to businesses at lower interest rates, increasing investment in the economy, and to consumers, increasing consumption, for example of cars and houses bought on credit. Higher asset prices such as shares and houses create a positive wealth effect, raising confidence and consumption. QE may also cause the euro to depreciate, making Eurozone exports cheaper and imports dearer, so net exports rise. As C, I and (X – M) increase, AD shifts right from AD to AD1 in my diagram, raising real GDP from Y to Y1 and, through the multiplier, reducing cyclical unemployment and shortening the recession. Without QE the Eurozone economy may have gone into deflation, with inflation already well below the target of 'below but close to 2%'. Deflation would significantly prolong the recession, as consumers delay purchases in anticipation of further falls in prices, and the real value of debt rises. By raising inflation expectations, QE helps the ECB meet its target, with the price level rising from P to P1. QE also keeps government borrowing costs low, so Eurozone governments can afford expansionary fiscal policy during the recession.

However, the effectiveness of QE in a significant recession may be limited. Many financial institutions used QE funding to improve their own financial stability and increase their liquid assets, rather than increasing lending to businesses and consumers, especially as banks fear loan defaults during a recession. The new money may simply sit in bank

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reserves.

A lack of consumer and business confidence means there is a lack of demand for loans. In a deep recession firms have significant spare capacity, so they do not want to invest even at very low interest rates, and consumers worried about losing their jobs and about the stability of the Eurozone economy increase savings rather than borrowing. This resembles a liquidity trap, so the transmission mechanism breaks down. In 2020 lockdowns meant many firms could not trade at all, so cheaper credit could not make up



for the collapse in demand.

The effect has also been limited by contractionary fiscal policy in many Eurozone countries, and fiscal rules such as the Stability and Growth Pact restrict government spending, so monetary policy alone may not be enough. Fiscal policy is often more direct and quicker in a recession.

Different European countries experience different economic situations, so a 'one size fits all' QE approach may be too much for some countries, such as Germany, and not enough for others, such as Italy or Spain, which had deeper recessions and higher debt.

QE also has side effects. It raises asset prices, benefiting wealthy asset holders and increasing wealth inequality. If the recession proves short-lived, too much QE could be inflationary once demand recovers, putting the 2% target at risk, and it is difficult to unwind. There are time lags of up to two years, and very low interest rates for a long

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period may encourage excessive risk taking and asset price bubbles.

On the other hand, the ECB's earlier QE programme from 2015 did lower bond yields, weaken the euro and help prevent deflation, and €750 billion, around 6% of Eurozone GDP, is a significant injection.

In conclusion, QE is effective at preventing a financial crisis and deflation and at lowering borrowing costs, but in a significant recession its ability to raise AD depends on confidence and on banks' willingness to lend. It is most effective when combined with expansionary fiscal policy, so it is necessary but not sufficient on its own.

Question 8

Environmental protection means reducing negative externalities such as pollution and carbon emissions to limit climate change, which could cut global GDP per capita by 15% by 2100 with a 2.5°C rise, or by over 30% with a 4°C rise. The main macroeconomic objectives are economic growth, low unemployment, low and stable inflation, a balance of payments equilibrium, a sustainable government budget and a fair distribution of income.

A trade-off occurs when achieving one objective makes another harder to achieve.

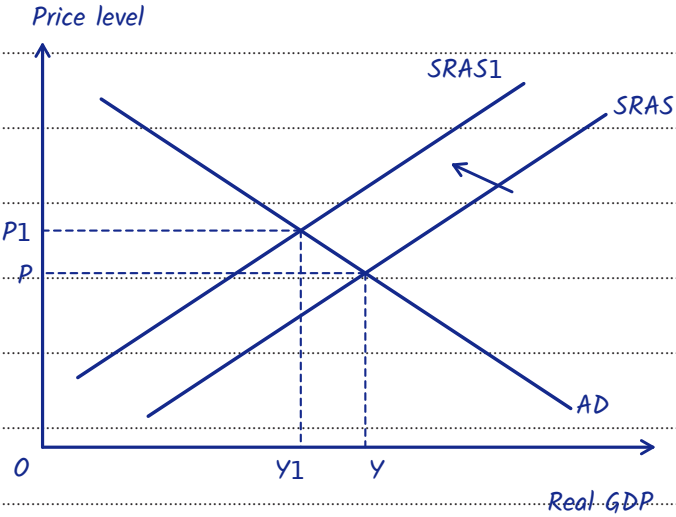
Firstly, there may be a trade-off with economic growth. Higher growth leads to more production and energy usage, and much of this energy is still powered by non-renewable sources such as gas in the UK or coal in Germany, China and India. Growth therefore increases carbon emissions, resource depletion and pollution. Policies to protect the environment, such as carbon taxes or strict regulation, raise firms' costs and reduce output, so growth slows; developing countries argue they need cheap fossil fuels to industrialise and reduce absolute poverty.

Secondly, there may be a trade-off with low inflation. Measures to protect the environment, for example packaging modifications, recycling costs, carbon taxes and buying permits in the EU Emissions Trading System, increase costs for firms. This shifts SRAS

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left from SRAS to SRAS1 in my diagram, pushing up the price level from P to P1 and causing cost-push inflation, while real output falls from Y to Y1.

Thirdly, there may be a trade-off with unemployment. Employees in polluting industries such as coal mining, steel and oil may lose their jobs if firms are forced to close due to government policies to reduce pollution, such as the closure of UK coal-fired power stations. This creates structural unemployment, as these workers' skills do not match new industries and they may be geographically immobile, concentrated in particular regions.



Fourthly, there may be a trade-off with income equality. Replacing non-renewable energy requires huge capital expenditure, which may increase energy costs for poorer people, especially in developing countries. Green taxes on fuel and energy are regressive, taking a larger share of the income of poor households. There may also be a trade-off with the balance of payments if domestic firms become less internationally competitive than firms in countries with weaker environmental rules, and with the government budget if subsidies for renewables are costly.

However, these trade-offs may not occur, or may only exist in the short run. Increased economic growth means governments have more tax revenue to invest in environmentally friendly solutions such as better public transport and research into carbon capture. The environmental Kuznets curve suggests that as countries become richer, pollution eventually falls as people demand a cleaner environment.

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Firms may take this opportunity to increase their efficiency: new, more environmentally friendly machinery may also be more efficient, cutting costs. Firms can make money from recycling products, and using recycled products in production may be cheaper, so in the long run SRAS may shift right rather than left.

In the long term renewable energy will be cheaper for consumers, as the cost of solar and wind power has fallen sharply, and it isn't subject to fluctuating world oil and gas prices, so it reduces cost-push inflation and improves energy security and the balance of payments of oil importers.

Many new jobs have been created in sectors such as renewable energy, electric vehicles, research into carbon capture and recycling, so structural unemployment may be temporary if governments provide retraining. Revenue from carbon taxes can also be used to compensate poorer households, reducing inequality.

Most importantly, the data suggests that failing to protect the environment would itself harm growth: a 4°C rise could reduce global GDP per capita by more than 30% by 2100, through droughts, floods, lower agricultural productivity and damage to infrastructure. In the long run, environmental protection and growth are complementary, and the trade-off is mainly short term. However, these estimates are uncertain, as they rely on models stretching 80 years ahead.

The size of the trade-offs also depends on the policy used: market-based tools such as carbon taxes and tradable permits achieve emission cuts at lower cost than blunt regulation. It also depends on international cooperation, as one country acting alone may simply lose industry to others (carbon leakage).

In conclusion, there are significant short-run trade-offs between environmental protection and growth, inflation, employment and equality, especially for developing countries and regions dependent on fossil fuels. In the long run these are much smaller, and the cost of not protecting the environment is likely to be far greater, so well-designed policies with

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support for affected workers and households can minimise the trade-offs.

TOTAL FOR SECTION C = 25 MARKS
TOTAL FOR PAPER = 100 MARKS

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