Cambridge Assessment International Education

Cambridge International AS & A Level

ECONOMICS **9708/21**

Paper 2 AS Level Data Response and Essays **October/November 2023**

2 hours

5318992527

You must answer on the enclosed answer booklet.

You will need: Answer booklet (enclosed)

INSTRUCTIONS

- Answer **three** questions in total:
  - Section A: answer Question 1.
  - Section B: answer **one** question.
  - Section C: answer **one** question.
- Follow the instructions on the front cover of the answer booklet. If you need additional answer paper, ask the invigilator for a continuation booklet.
- You may use a calculator.
- You may answer with reference to any economy you have studied where relevant to the question.

INFORMATION

- The total mark for this paper is 60.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **4** pages.

© UCLES 2023

[Turn over

stemup.co.uk

Section A

Answer all parts of Question 1.

1 **Economic growth in Taiwan**

In 2021, Taiwan's economy is forecast to grow at its fastest rate in seven years, encouraged by increasing global demand for its technology products. Gross domestic product (GDP) is expected to rise by 4.6% in 2021.

Exports from Taiwan's electronics industry include gaming devices, laptops, devices that aid cloud computing and semiconductors for car production. Taiwan is able to take advantage of a global shortage of semiconductors and it is estimated that exports will grow by 9.6% in 2021, the strongest export growth since 2017. A Taiwanese company is the world's largest producer of semiconductors, and it plans to increase its capital investment by as much as US$28 billion in 2021 to help meet the shortage of semiconductors.

Consumption expenditure in Taiwan is also expected to grow by 3.7% in 2021 which would be the fastest rate of growth in 17 years.

It is significant that the expected growth in GDP in 2021 is higher than the expected rate of increase in the consumer price index (CPI), as is shown in Table 1.1.

Table 1.1 Selected economic data for Taiwan, 2021

	Previous forecast (November 2020)	Latest forecast (February 2021)
Nominal GDP growth (% per year)	3.8	4.6
CPI increase (% per year)	1.2	1.3
Export sales growth (% per year)	4.6	9.6
Trade balance (US$ billion)	57.8	63.9

The growth in the demand for Taiwan's exports has contributed to an appreciation of more than 7% in the Taiwan dollar against the US dollar during 2020. Taiwan had a trade surplus of US$58.8 billion in 2020 and this is expected to rise to US$63.9 billion in 2021. This increase is likely to appreciate the value of the Taiwan dollar further.

Sources: Adapted from: Forbes magazine, 22 February 2021
and: Bloomberg, 20 February 2021

© UCLES 2023

stemup.co.uk

(a) Using the data in Table 1.1, calculate the expected growth in Taiwan's real GDP in 2021, based on the latest forecast. [2]

(b) State **two** internal causes of economic growth for Taiwan in 2021 and consider which of these is more likely to generate long-term economic growth. [4]

(c) Explain why the Taiwan dollar appreciated in 2020. [2]

(d) Assess whether the effects of the appreciation of the Taiwan dollar on the terms of trade will benefit all industries in Taiwan. [6]

(e) Assess the possible consequences of a higher rate of economic growth for an economy such as Taiwan. [6]

© UCLES 2023

[Turn over

stemup.co.uk

Section B

Answer **one** question.

EITHER

2 **(a)** With the help of a diagram, explain what could cause an increase in demand for a product **and** consider whether the impact of an increase in demand on the price of the product will be the same in the short run and the long run. [8]

(b) Assess whether price elasticity of demand (PED) or income elasticity of demand (YED) is likely to be of greater importance to a firm producing cars. [12]

OR

3 **(a)** Explain why a government might decide to increase its direct provision of essential goods and services **and** consider whether such a policy is always likely to be successful. [8]

(b) Governments sometimes fix maximum prices on goods for different reasons.

Assess whether the use of a maximum price is always advantageous. [12]

Section C

Answer **one** question.

EITHER

4 **(a)** Explain the reasons why governments impose taxes **and** consider whether an increase in income tax is fairer than an increase in sales taxes. [8]

(b) Assess whether a government should always aim to balance its budget rather than have a budget surplus or a budget deficit. [12]

OR

5 **(a)** Explain the difference between an import tariff and an import quota **and** consider why a government would choose an import tariff rather than an import quota as a tool of protection in international trade. [8]

(b) Assess whether the theories of absolute and comparative advantage are substantially undermined by their various limitations. [12]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of Cambridge Assessment. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which is a department of the University of Cambridge.

© UCLES 2023

stemup.co.uk

Surname	StemUp Model Solution
Answer booklet	Write the question number in the left-hand margin at the start of each answer.

Question number

Answers for paper 9708/21

1(a) Real GDP growth = nominal GDP growth – CPI increase

= 4.6% – 1.3% = 3.3%

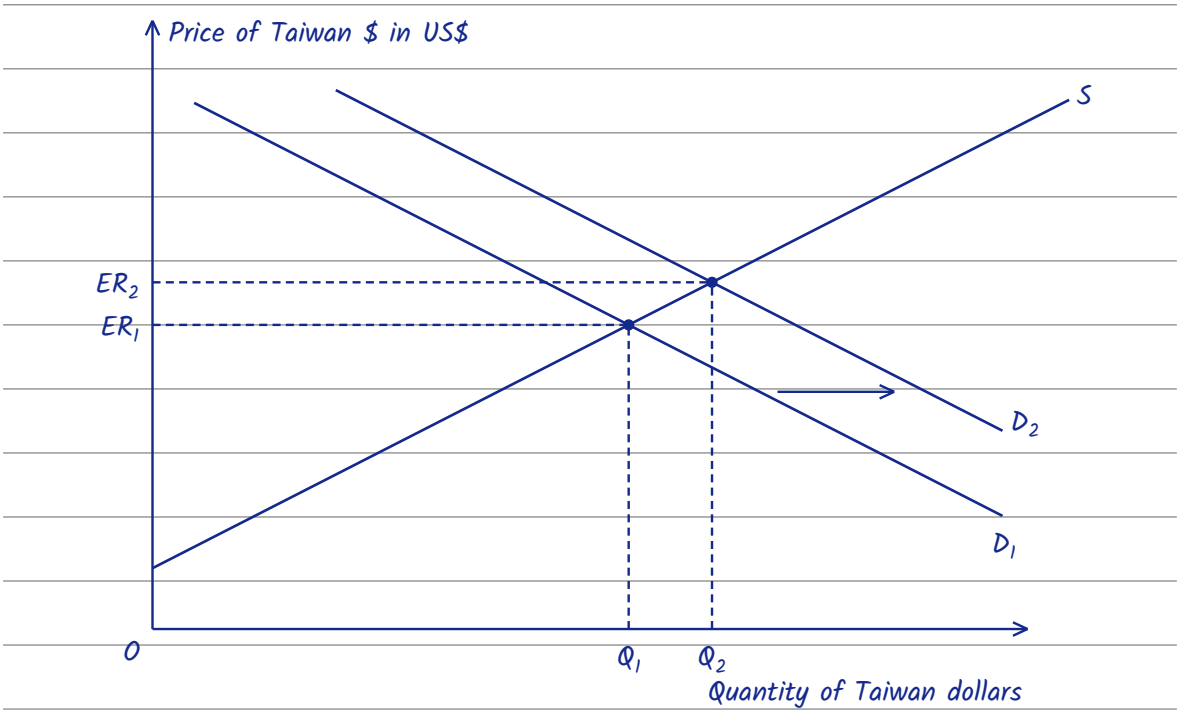
1(b) 1. Capital investment: the Taiwanese semiconductor producer plans to increase its capital investment by as much as US$28 billion in 2021.

2. Consumption expenditure: this is expected to grow by 3.7% in 2021, the fastest rate of growth in 17 years.

Capital investment is more likely to generate long-term growth. Consumption only raises aggregate demand while it lasts, but investment also adds to the capital stock and productive capacity, shifting the PPC outwards, so it raises potential output for years to come.

1(c) Global demand for Taiwan's technology exports such as semiconductors increased, so its trade surplus was large (US$58.8 billion in 2020). Foreign buyers need Taiwan dollars to pay for these exports, so the demand for the Taiwan dollar shifted to the right and its price rose by more than 7% against the US dollar.

Question number



1(d) The terms of trade measure the ratio of average export prices to average import prices, calculated as (index of average export prices ÷ index of average import prices) × 100.

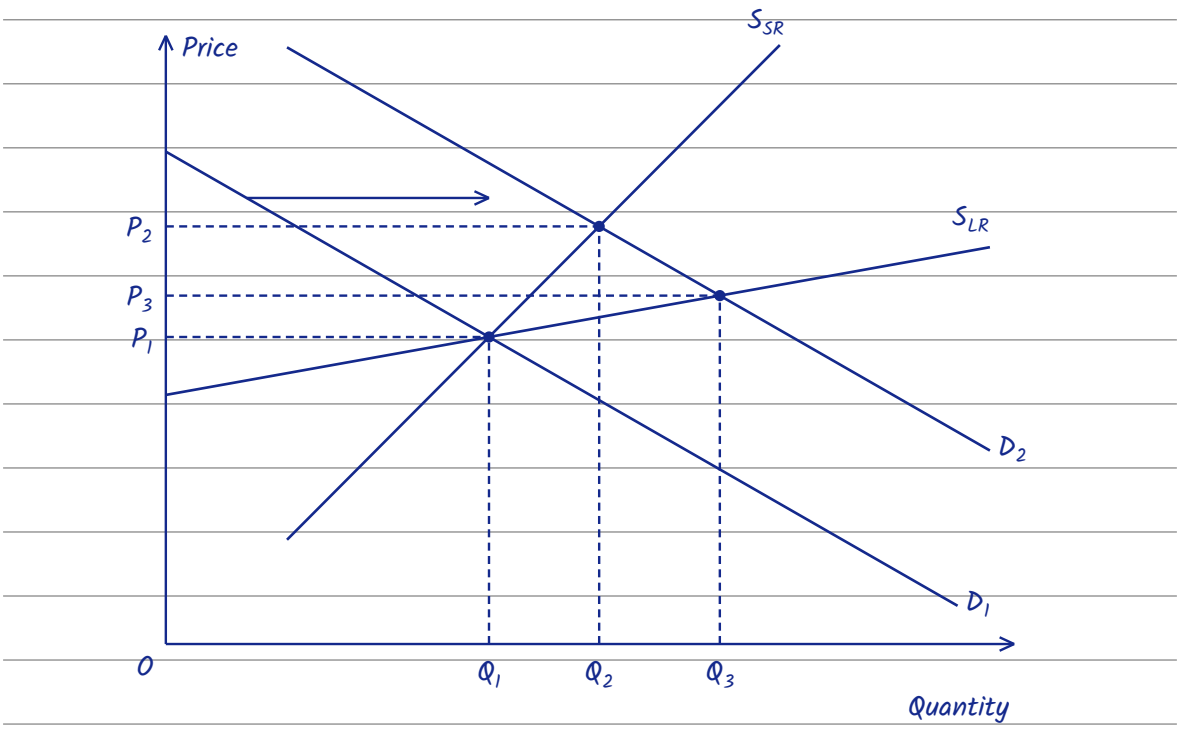
The appreciation of more than 7% means Taiwan's exports become more expensive in foreign currency and imports become cheaper in Taiwan dollars, so the terms of trade improve: each unit of exports buys more imports. Industries that rely on imported raw materials and components, for example the electronics firms that import parts, benefit from lower costs, and consumers pay less for imported goods, which keeps CPI inflation low at 1.3%.

However, the effect is not the same for every industry. Exporters whose products have price elastic demand, such as gaming devices and laptops facing strong foreign competition, will lose sales and revenue, and import-competing domestic firms lose sales to cheaper imports, so jobs may be lost.

Semiconductor producers are likely to benefit because there is a global shortage, so demand is price inelastic and export revenue rises. Overall, the improvement in the terms of trade will not benefit all industries: it helps importers and firms with

Question number	
	inelastic export demand, but harms exporters with price elastic demand and firms competing with imports.
1(e)	Higher economic growth, such as Taiwan's 4.6% forecast, raises real incomes, so the standard of living can improve. More output means more jobs and less poverty, and higher tax revenue allows the government to spend more on education and health care without raising tax rates, which can raise growth further. However, faster growth puts pressure on scarce resources. Increased production of electronics can cause pollution, congestion and the depletion of resources, which lower the quality of life. If demand grows faster than capacity it can also cause inflation, and growth that relies heavily on exports, such as the 9.6% rise in exports, leaves Taiwan exposed to a fall in world demand. The benefits may also be unequally distributed. On balance, the consequences are likely to be mainly positive for Taiwan because inflation is low at 1.3% and much of the growth comes from investment that raises capacity, but this depends on the growth being sustainable and on the government controlling its environmental costs.
2(a)	Demand is the quantity of a product consumers are willing and able to buy at each price in a given time period. An increase in demand is a shift of the demand curve to the right, from D_1 to D_2, so more is demanded at every price.

Question number



Causes include a rise in income (for a normal good), a rise in the price of a substitute or a fall in the price of a complement, a successful advertising campaign that makes tastes more favourable, a growing population, or expectations that the price will rise in future. For example, if the price of coffee rises, demand for tea shifts to the right.

At the original price P_1 there is now excess demand, so the price is bid up and firms are given the incentive to supply more, moving along the supply curve until a new equilibrium is reached.

The impact on price is not the same in the short run and the long run. In the short run supply is price inelastic (S_{SR}) because firms cannot quickly increase their capacity, so the price rises sharply to P_2 and quantity only rises to Q_2. In the long run firms can invest in capacity and new firms enter, so supply is more elastic (S_{LR}) and the price falls back to P_3, with a much larger quantity Q_3. So the price rise is larger in the short run, although the size of the difference depends on how quickly the industry can expand; for goods such as fresh food or land it may be small.

Question number

2(b)

Price elasticity of demand (PED) measures the responsiveness of quantity demanded to a change in the product's own price.

PED = % change in quantity demanded ÷ % change in price

Income elasticity of demand (YED) measures the responsiveness of quantity demanded to a change in consumers' income.

YED = % change in quantity demanded ÷ % change in income

PED is very important to a car producer because it decides prices and so total revenue. If demand for a model is price elastic (PED greater than 1), for example a basic family car with many close substitutes from other brands, cutting the price raises revenue, because quantity rises by a larger percentage. If demand is price inelastic, for example a luxury or well-known brand with strong loyalty, raising the price raises revenue. PED also shows how much of a rise in costs, such as a higher sales tax or steel price, can be passed on to buyers. It is relatively easy for a firm to estimate from its own sales data after earlier price changes.

YED is also important because cars are expensive and usually bought with credit, so they are normal goods with high income elasticity, often above 1. In an economic upturn demand for cars rises faster than income, while in a recession demand falls sharply. YED therefore helps the firm plan production, employment and investment in new capacity, and decide its product range, for example more luxury models when incomes are rising and more small, cheap cars in a downturn or in lower-income markets.

However, both have weaknesses. PED estimates depend on the availability of substitutes, the time period and the proportion of income spent on cars, and they change when rivals change their prices. YED is harder to calculate because the firm must rely on forecasts of national income, which are often wrong, and the firm has no control over income.

On balance, PED is likely to be of greater importance because price is a variable the firm controls every day and it directly decides revenue. YED is still useful for

Question number

long-term planning, especially in an economy that is moving between boom and recession, and the best decisions will use both together with other information such as costs and rivals' behaviour.

3(a) Essential goods and services are those everyone needs for a reasonable standard of living, such as education, health care, housing, clean water and basic food. Many are merit goods, which are under-consumed in a free market. Direct provision means the state supplies them itself, usually free or at a low price, financed out of tax revenue.

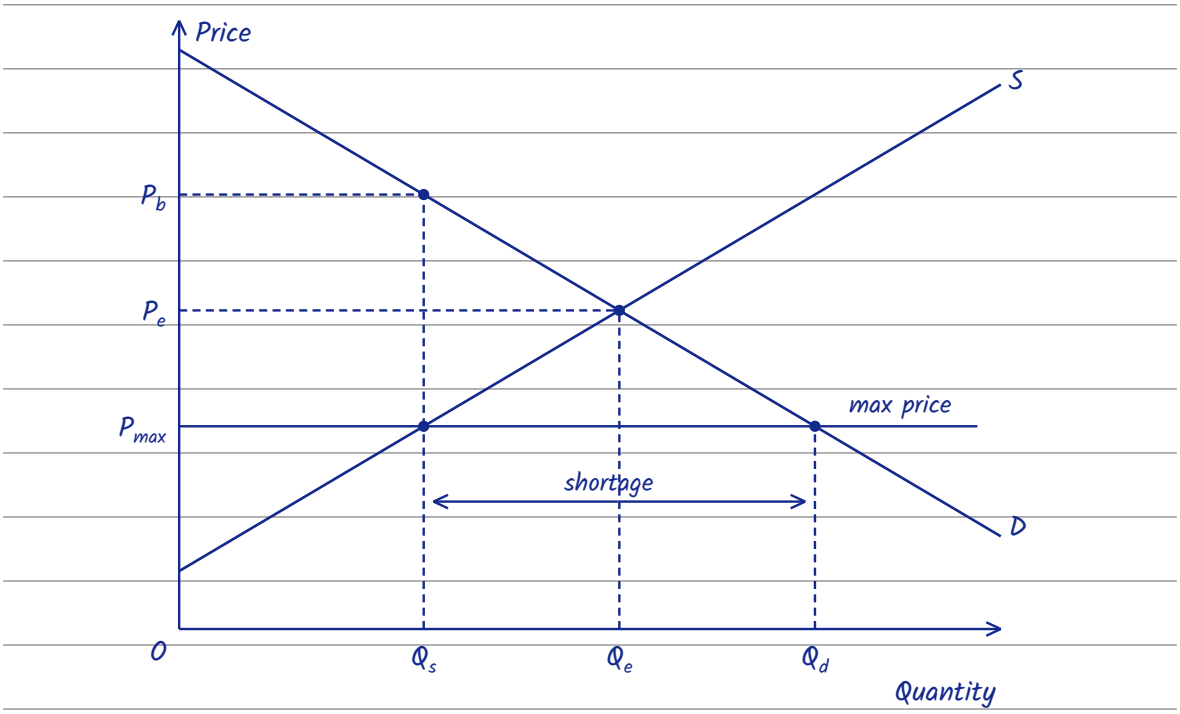
A government might increase its provision of health care because consumers have imperfect information and underestimate the benefits of check-ups and vaccinations, and the poor cannot afford private fees. Free state provision raises consumption towards the socially optimum level, and gives positive externalities such as less spread of disease and a healthier, more productive workforce.

Similarly, it may provide more education, because a better-educated workforce raises productivity and economic growth and reduces inequality, benefits a private market would not take into account. It may also provide housing or food to the poorest to reduce absolute poverty.

However, the policy is not always successful. State providers lack the profit motive, so they may be inefficient, with long waiting lists and low quality, which is government failure. There is an opportunity cost, as the money must come from higher taxes, borrowing or cuts elsewhere, and the government may lack the information to judge how much to provide. In conclusion, direct provision is likely to raise consumption of essential goods, but it is only successful if it is well managed and properly funded, so it is not always successful.

3(b) A maximum price is a legal limit on the price of a product that is set below the free market equilibrium price, for example on essential foods, rents or fuel.

Question number



The main advantage is that it makes essential items more affordable. At P_{max} consumers pay less than the equilibrium price P_e, so low-income households can buy food or housing they could not afford before. This reduces poverty and inequality and protects consumers from firms with monopoly power or from very high prices in an emergency, such as a natural disaster. It can also help to keep the inflation rate down.

However, the price ceiling creates excess demand. At P_{max} producers are only willing to supply Q_s while consumers demand Q_d, so there is a shortage of Q_sQ_d. Quantity traded falls from Q_e to Q_s, so some consumers who would have bought at P_e now get nothing. The good must be rationed by queuing, waiting lists, first come first served or favouritism, which wastes time. As some consumers are willing to pay up to P_b for the limited supply Q_s, a black market develops, where the good is sold illegally above P_{max}. Producers earn less revenue, so they may cut quality, leave the industry or not invest; for example rent controls can lead to fewer and poorer quality homes.

Whether a maximum price is advantageous depends on several factors. If supply and demand are price inelastic, as with many basic foods in the short run, the

Question number

shortage is small and the gain to consumers is large. If supply is elastic, output falls a lot and the shortage is severe. It also depends on where the ceiling is set: one set only slightly below P_e causes a small shortage, while one set above P_e has no effect. Effective enforcement and rationing, for example coupons, can limit the black market, and the government may combine it with subsidies to producers or its own supply to remove the shortage, although this costs money.

In conclusion, a maximum price is not always advantageous. It helps the consumers who are able to buy at the lower price, but it harms producers and the consumers who are left without the good. It works best as a short-term measure for essential goods with inelastic supply, combined with policies to raise supply.

4(a) Governments impose taxes for several reasons: to raise revenue to finance spending on public goods and merit goods such as defence, health and education; to redistribute income from the rich to the poor and reduce inequality; to discourage the consumption of demerit goods and goods with negative externalities, such as cigarettes or petrol; and to manage the economy, for example raising taxes to reduce aggregate demand and inflation. Tariffs may also be used to protect domestic industries.

Income tax is a direct tax, paid out of income by the person on whom it falls. It is usually progressive: the marginal rate rises as income rises, so higher earners pay a larger proportion of their income. This follows the ability-to-pay principle and narrows income inequality. A sales tax is an indirect tax on spending. It is regressive, because the poor spend a larger proportion of their income, so they pay a larger proportion of their income in tax.

So an increase in income tax is generally fairer, as it is based on ability to pay. However, sales taxes can be made less regressive by exempting essentials such as food, and they are paid by everyone who spends, including those in the informal economy who avoid income tax. Higher income tax may also reduce the incentive

Question number

to work. On balance, a rise in income tax is fairer, provided it is progressive and difficult to evade.

4(b) A balanced budget is when government spending equals tax revenue in a year. A budget deficit is when spending is greater than revenue, so the government must borrow and national debt rises. A budget surplus is when revenue is greater than spending.

A balanced budget is often seen as prudent. The government does not add to its debt, so it avoids rising interest payments, which have an opportunity cost, and does not crowd out private investment. It is also broadly neutral in its effect on aggregate demand, so it does not cause inflation.

However, a budget deficit is a deliberate expansionary fiscal policy. In a recession, higher government spending or lower taxes increase aggregate demand ($AD = C + I + G + X - M$), and through the multiplier raise real output and employment and the rate of economic growth. Deficits also occur automatically in a recession, as tax revenue falls and unemployment benefits rise, which helps to stabilise the economy. Borrowing to invest in infrastructure and education also raises long-run productive capacity.

A budget surplus is a contractionary fiscal policy. When the economy is booming and there is demand-pull inflation, higher taxes and lower spending reduce aggregate demand, reducing inflation, and lower incomes reduce spending on imports, improving the trade balance. A surplus can also be used to repay national debt.

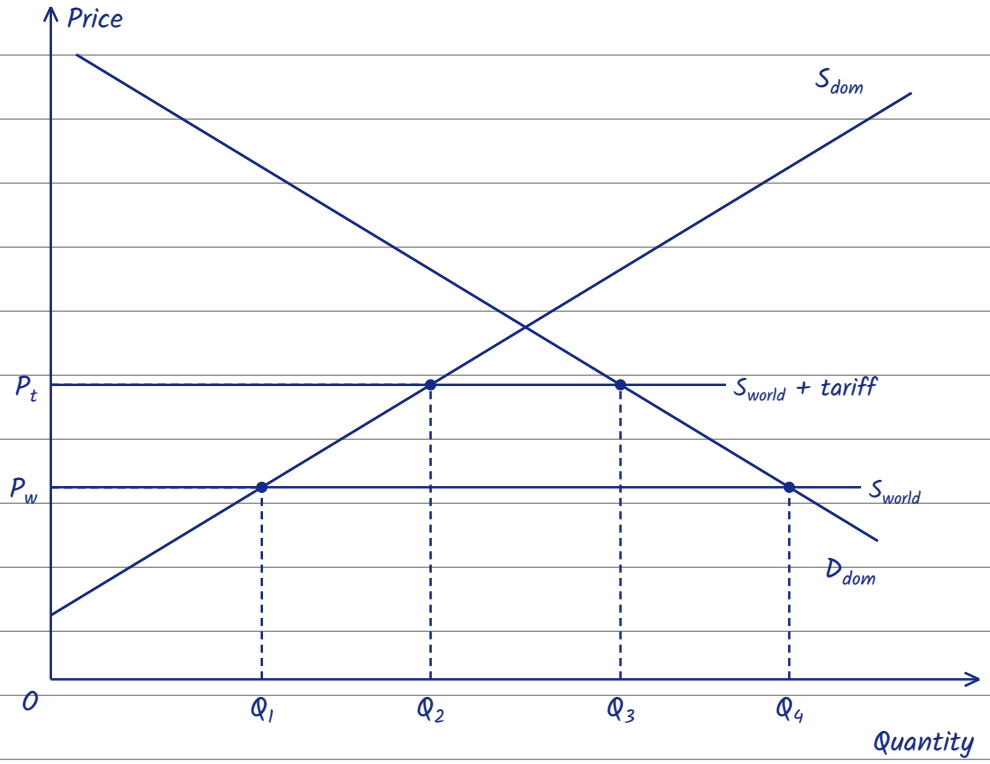
So the right fiscal position depends on the macroeconomic problem. Aiming always for a balanced budget would remove the use of fiscal policy as a stabiliser: a government that cut spending in a recession to balance the budget would make unemployment worse. On the other hand, persistent deficits build up debt, may cause inflation if the economy is near full capacity and can damage confidence,

Question number

while a surplus held in a recession would deepen it. The size of the existing debt, the level of interest rates and the size of the multiplier all matter.

In conclusion, a government should not always aim to balance its budget each year. It should run a deficit to tackle unemployment and slow growth, a surplus to tackle inflation, and aim to balance the budget over the economic cycle as a whole.

5(a) An import tariff is a tax on imported goods, which raises their price in the domestic market and so reduces the quantity imported. An import quota is a physical limit on the quantity or value of a good that may be imported in a time period.



With free trade the price is P_w and imports are Q_1Q_4. A tariff raises the price to P_t: domestic production rises to Q_2 and consumption falls to Q_3, so imports fall to Q_2Q_3. A quota of Q_2Q_3 would give the same price and quantity, but the difference is who gains.

With a tariff the government receives tax revenue (imports × tariff), which it can

Question number

spend, while with a quota the extra price is kept by foreign exporters or the importers who hold the licences, and the government gains nothing. A tariff also keeps the price mechanism working, so the most efficient foreign producers continue to sell, and it is more transparent and easier to adjust.

A quota is more certain, however, as it fixes the exact quantity of imports, whereas the effect of a tariff depends on the price elasticity of demand. So a government would usually choose a tariff because of the revenue and the smaller distortion, unless it needs a guaranteed limit on imports.

5(b) A country has an absolute advantage when it can produce a good with fewer resources (or more output from the same resources) than another country. It has a comparative advantage when it can produce a good at a lower opportunity cost than another country. The theories state that if countries specialise in the goods in which they have a comparative advantage and trade, world output rises and both can consume beyond their own production possibility curves.

Output per worker per day:

	Rice	Cloth	Opp. cost of 1 cloth
Country X	20	10	2 rice
Country Y	6	6	1 rice

X has an absolute advantage in both goods, but Y has a comparative advantage in cloth (opportunity cost 1 rice compared with 2) and X in rice. If they specialise and trade at, for example, 1.5 rice for 1 cloth, both gain.

However, the theories rest on assumptions that do not hold in the real world. They assume only two countries and two goods, whereas trade involves many countries and thousands of goods. They assume no transport costs, but these can remove the cost advantage, especially for bulky goods. They assume constant returns to

Question number

scale and constant opportunity costs, whereas in practice producers may gain economies of scale, or costs may rise as they specialise. They assume perfect competition and perfect factor mobility, so workers can move freely from one industry to another, when in fact there is occupational immobility and specialisation can cause structural unemployment. They also assume free trade, but many countries use tariffs, quotas and subsidies. Finally, comparative advantage can change over time, and over-specialisation makes a country vulnerable to a fall in demand or prices for its main exports.

These limitations weaken the precise predictions but do not undermine the basic principle. Economies of scale actually strengthen the case for specialisation, and transport costs have fallen sharply with containerisation. The large growth of world trade and the success of export-led economies show that countries gain from specialising according to comparative advantage, even with trade barriers.

Immobility and over-specialisation are real costs, but they are mainly short-term problems that can be reduced with retraining and diversification.

In conclusion, the theories are not substantially undermined. Their assumptions are unrealistic, so the gains from trade are smaller and less evenly shared than the simple model suggests, but the central conclusion that specialisation and trade increase total output remains valid.

Cambridge Assessment International Education

Cambridge International AS & A Level

ECONOMICS **9708/22**

Paper 2 AS Level Data Response and Essays **October/November 2023**

2 hours

3240590179

You must answer on the enclosed answer booklet.

You will need: Answer booklet (enclosed)

INSTRUCTIONS

- Answer **three** questions in total:
  - Section A: answer Question 1.
  - Section B: answer **one** question.
  - Section C: answer **one** question.
- Follow the instructions on the front cover of the answer booklet. If you need additional answer paper, ask the invigilator for a continuation booklet.
- You may use a calculator.
- You may answer with reference to any economy you have studied where relevant to the question.

INFORMATION

- The total mark for this paper is 60.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **4** pages.

© UCLES 2023

[Turn over

stemup.co.uk

Section A

Answer all parts of Question 1.

1 Electric cars create challenges for oil producers

Oil companies are facing uncertainty in 2020 as the COVID-19 pandemic causes a collapse in demand for their product, but car producers are predicting the pandemic will help accelerate the use of electric cars. Looking ahead, cuts in investment by oil companies as their revenues fall could reduce supply enough to cause a rise in oil prices. This makes electric cars more attractive just as car producers increase production.

Table 1.1 Selected data from the oil and car industries, 2014 to 2020

	2014	2015	2016	2017	2018	2019	2020
Average real global price of oil (US$ per barrel)	93.2	48.5	43.3	50.8	65.2	57.0	39.7
Global sales of electric cars (millions)	N/A	0.6	0.8	1.3	2.1	2.2	2.3

Sources: Macrotrends.net and World Economic Forum

However, the rise of electric car sales could slow within the next few years due to a worldwide shortage of the supply of lithium needed for car batteries. Demand for lithium could triple by 2025 to one million tonnes per year and then double again to two million tonnes per year by 2030. A typical lithium mine produces 30 000 tonnes per year which means the market needs approximately four new mines per year to meet demand. However, it usually takes about six years to discover, develop and put a lithium mine into production.

Rising global sales of electric cars are impacting on world oil producers. The boom years for the oil industry are over as economies start to deal with climate change. This will have significant implications for petrostates (countries whose economies are almost totally reliant on oil and gas).

Volatile oil prices, as illustrated in Table 1.1, have already left many petrostate governments struggling. The governments of most Middle Eastern oil producing countries cannot maintain a balanced budget at the 2020 average oil price of around US$40. Years of unstable oil revenues have left these countries with significant levels of national debt.

Venezuela offers a cautionary tale. Serious mismanagement has caused its oil output in 2020 to drop to about 10% of its 2000 level. Gross domestic product (GDP) has fallen by more than 75% in the past 5 years and more than 5 million people have left the country.

The solution is diversification. Wealthy Middle East states, such as Oman and Saudi Arabia, are investing in renewable energy and international tourism. Attempts at change by less wealthy petrostates such as Venezuela are hampered by a lack of capital at home and because they are often unable to attract international investors. As a result, they tend to focus on short-term rather than long-term economic growth.

Ultimately, many petrostates are likely to need outside support to diversify their economies. In addition to financial aid, it is suggested that wealthy countries should also offer technical assistance such as retraining workers, help designing new tax systems and support with the adoption of renewable energy.

Sources: Adapted from: Matthew Green and Simon Jessop, Reuters, 19 May 2020 and: STV news PA Media, August 2021 and: energymonitor.ai/policy, April 2021

© UCLES 2023

stemup.co.uk

(a) Using the data in Table 1.1, calculate the percentage change in the average real global price of oil between 2014 and 2020. [2]

(b) Explain why the price of oil on the world market fell in 2020. [2]

(c) With the help of a diagram, explain why the supply problem referred to may lead to increases in the price of electric cars in the future and consider **one** policy that may be used to overcome this supply problem. [4]

(d) Explain whether unemployment caused by the diversification of petrostates away from oil and gas production is likely to be cyclical or structural and consider which type of unemployment is likely to be more damaging to these economies. [6]

(e) Assess whether diversification is likely to be more successful in Venezuela or Saudi Arabia as they reduce their dependence on oil production. [6]

© UCLES 2023

[Turn over

stemup.co.uk

Section B

Answer **one** question.

EITHER

2 **(a)** With the help of a formula, explain what is meant by the term price elasticity of demand for a product **and** consider the extent to which it allows an entrepreneur to determine the effect of price changes on the total expenditure on their product. [8]

(b) Assess whether the concept of price elasticity of supply or cross elasticity of demand will be more useful to a business wanting to increase its total sales in a growing economy. [12]

OR

3 **(a)** With the help of examples, explain the difference between free goods and public goods **and** consider the view that public goods can never be provided in a market economy. [8]

(b) The provision of merit and demerit goods differs from the provision of other private goods.

Assess the view that the consequences of imperfect information are more serious in a market economy than in a mixed economy. [12]

Section C

Answer **one** question.

EITHER

4 **(a)** Explain the difference between the terms of trade and the balance of trade in goods **and** consider whether an economy should be more concerned about its terms of trade than its balance of trade in goods. [8]

(b) Assess whether a rise or a fall in the terms of trade will benefit the macroeconomic performance of an open economy that is heavily dependent on international trade. [12]

OR

5 **(a)** With the help of a diagram(s), explain one reason for an increase in aggregate demand and one reason for an increase in aggregate supply **and** consider whether an increase in aggregate demand will always lead to inflation. [8]

(b) Assess whether the internal effects of inflation are more serious than the external effects of inflation for an economy. [12]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of Cambridge Assessment. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which is a department of the University of Cambridge.

stemup.co.uk

Surname	StemUp Model Solution
Answer booklet	Write the question number in the left-hand margin at the start of each answer.

Question number

Answers for paper 9708/22

1(a) % change = (39.7 – 93.2) ÷ 93.2 × 100

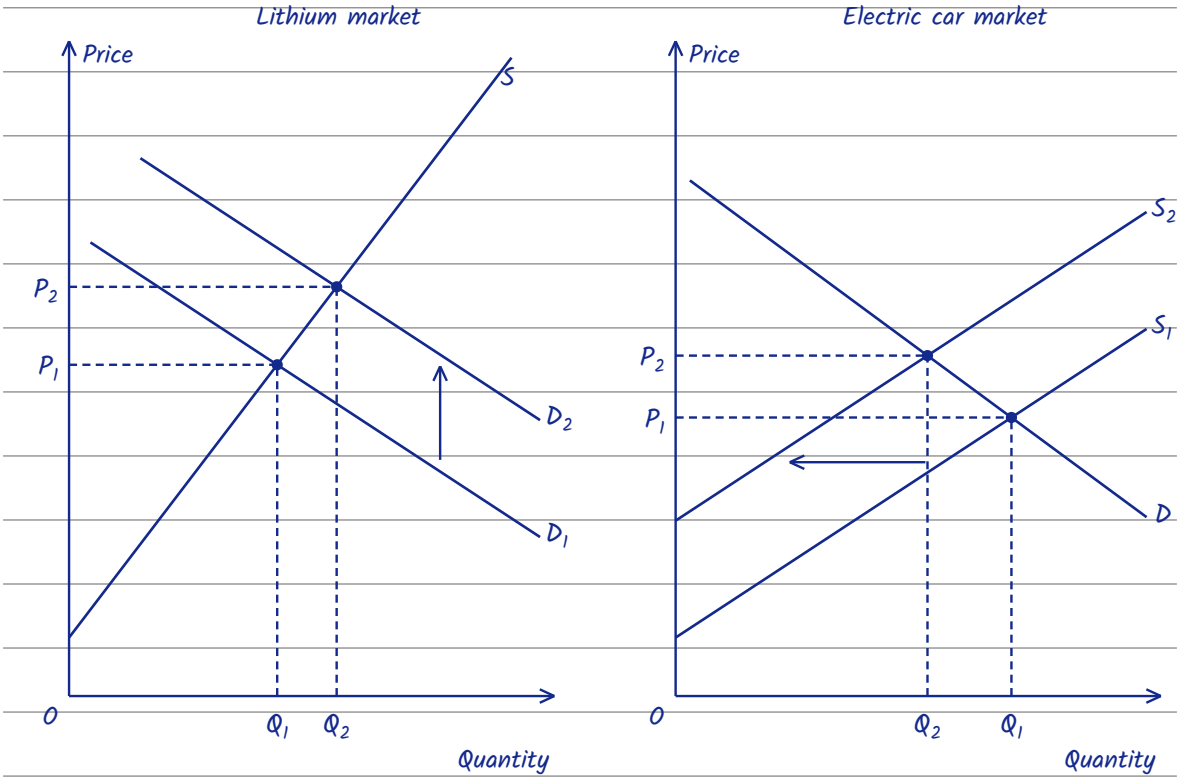
= –53.5 ÷ 93.2 × 100 = –57.4%

The price fell by 57.4%.

1(b) The COVID-19 pandemic and the growing use of electric cars caused a collapse in the demand for oil, so the demand curve shifted to the left. At the old price there was a surplus, so producers were forced to cut prices to sell their oil, and the average price fell to US$39.7 a barrel.

1(c) Demand for lithium could triple to one million tonnes a year by 2025, but supply is very price inelastic because a new mine takes about six years to come into production. So demand shifts from D_1 to D_2 with little extra supply, and the price of lithium rises from P_1 to P_2.

Question number



Lithium is used in batteries, so it is a major cost of production of electric cars. Higher costs shift the supply of electric cars to the left, from S_1 to S_2, so the price of electric cars rises from P_1 to P_2.

Policy: the government could give subsidies or tax allowances to firms that explore for and develop new lithium mines. This lowers their costs and risk, so more mines open sooner and the supply of lithium increases, which reduces the shortage and the pressure on battery costs.

1(d) Cyclical unemployment is caused by a lack of aggregate demand in a downturn of the economic cycle. Structural unemployment is caused by a long-term change in the structure of the economy, when demand for the output of an industry declines and its workers lack the skills or mobility to move to new industries.

Unemployment caused by diversification away from oil and gas is likely to be structural. The decline is permanent, as the boom years for oil are over because of climate change, and oil workers have skills that are not easily transferred to renewable energy or international tourism, so they are occupationally immobile.

Question number

Cyclical unemployment usually lasts only until demand recovers, and it can be reduced fairly quickly by expansionary fiscal or monetary policy. Structural unemployment is long term and needs supply-side policies such as retraining, which take years and are costly. In a petrostate whole regions depend on oil, so the loss of jobs reduces incomes, tax revenue and spending, and skills become out of date.

So structural unemployment is likely to be more damaging. However, the falling oil price also causes a cyclical downturn, and governments that cannot balance their budget at US$40 oil and already have high debt may be unable to use fiscal policy. Overall, structural unemployment is more damaging for petrostates because it is long term and needs retraining, which the data suggests may need outside technical assistance.

1(e) Saudi Arabia is likely to diversify more successfully. It is wealthy, so it has its own capital to invest and is already investing in renewable energy and international tourism. It is also more likely to attract foreign investors, so it can focus on long-term growth.

Venezuela faces much bigger problems. Mismanagement has cut its oil output to about 10% of its 2000 level and GDP has fallen by more than 75% in five years, so it lacks capital at home and is unable to attract international investors. More than 5 million people have left, many of them skilled workers, which reduces the quantity and quality of labour, and it is focused on short-term rather than long-term growth.

However, diversification may be easier from a low base in Venezuela if it receives outside support, such as financial aid and technical help with retraining and tax systems, while Saudi Arabia is more heavily reliant on oil and both face volatile oil prices and rising debt. Success also depends on political stability and whether aid is accepted. On balance, diversification is far more likely to succeed in Saudi

Question number

Arabia, because it has the wealth, investment and long-term focus that Venezuela lacks.

2(a)

Price elasticity of demand (PED) measures the responsiveness of the quantity demanded of a product to a change in its own price.

PED = % change in quantity demanded ÷ % change in price

Demand is price elastic when the PED is greater than 1 (ignoring the minus sign), so the percentage change in quantity demanded is larger than the percentage change in price. It is price inelastic when PED is less than 1, so the percentage change in quantity demanded is smaller than the percentage change in price.

Total expenditure is price × quantity. If demand is price elastic, a price rise causes a proportionately larger fall in quantity, so total expenditure falls, while a price cut causes a proportionately larger rise in quantity, so total expenditure rises. If demand is price inelastic, a price rise causes a proportionately smaller fall in quantity, so total expenditure rises, while a price cut reduces total expenditure. If PED = 1, total expenditure is unchanged.

PED therefore lets an entrepreneur predict the direction of the change in expenditure. However, the value is only an estimate based on past data, which is costly to collect, and it changes over time and along the demand curve. Other factors may change at the same time, such as incomes, rivals' prices or advertising, so the effect of the price change cannot be isolated. In conclusion, PED is a useful guide to the effect of price changes on total expenditure, but only to a limited extent, as it is not precise.

2(b)

Price elasticity of supply (PES) measures the responsiveness of quantity supplied to a change in price: PES = % change in quantity supplied ÷ % change in price.

Cross elasticity of demand (XED) measures the responsiveness of the demand for one good to a change in the price of another good: XED = % change in quantity

Question number

demanded of good A ÷ % change in price of good B.

In a growing economy incomes are rising, so demand for most products increases. PES is useful because it shows whether the business can respond to this. If its supply is price elastic, for example because it has spare capacity, stocks or flexible labour, it can increase output quickly as demand rises and sell more, rather than letting the price rise and losing customers to rivals. If supply is inelastic, PES tells the business it must invest in new capacity or technology, or hold more stock. However, PES is about the supply side and does not directly increase sales; it depends on the time period, and some products, such as agricultural or perishable goods, have inelastic supply whatever the business knows. The value may also change quickly as the economy grows.

XED is useful because it tells the business the relationship between its product and others. A positive XED shows a substitute: a high value means close competitors, so if a rival raises its price, the business can gain many customers, and it must respond quickly to a rival's price cut. A negative XED shows a complement, so the business may cut the price of one product, for example printers, to sell more of another, such as ink. This helps it develop a pricing strategy to increase total sales. However, XED values are estimates that are difficult to keep up to date in a growing economy, the business may not be able to cut prices if its costs are rising, and non-price factors such as brand loyalty may be more important than rivals' prices.

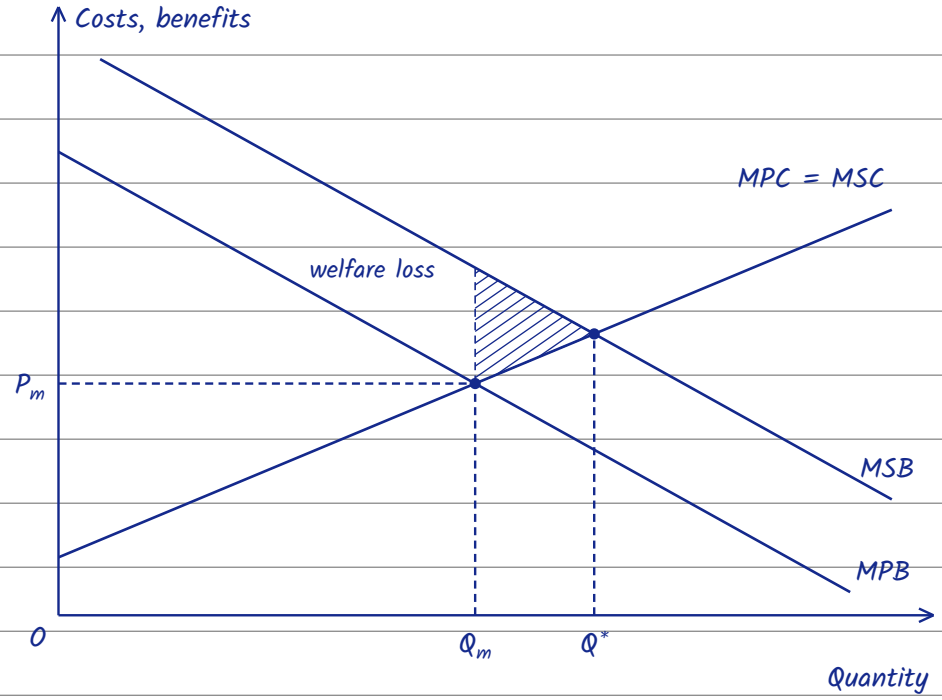
In a growing economy the main opportunity is that demand is rising, so the biggest risk to sales is being unable to supply enough. This suggests PES is more useful, as it shows whether the firm can take advantage of the growth. XED is more useful in a competitive market where sales depend on prices relative to rivals. The business would also need to know income elasticity of demand (YED), because if its product is an inferior good, sales may fall as incomes rise whatever its PES or XED.

Question number	
	In conclusion, in a growing economy PES is likely to be the more useful concept for a business aiming to increase total sales, provided demand for its product is income elastic, but XED remains important in highly competitive markets, and both depend on accurate, up-to-date estimates.
3(a)	A free good is a good that is not scarce, so it has zero opportunity cost and no price, because no factors of production are needed to produce it, for example air or sea water. A public good is scarce and has an opportunity cost, but has two characteristics. It is non-excludable: people who do not pay cannot be prevented from benefiting. It is non-rival: one person's consumption does not reduce the amount available to others. Examples are street lighting and national defence. Because a public good is non-excludable, consumers can benefit without paying, so they have an incentive to be free riders and will not reveal how much they value it. Because it is non-rival, the extra cost of another user is zero, so charging a price is inefficient. As a result, private firms cannot charge a price and earn a profit, so the market economy fails to provide it at all (a missing market) and it must be provided by the government and financed by taxation. This suggests that pure public goods cannot be provided in a market economy. However, many goods are quasi-public goods, such as roads, which can become excludable with tolls or rival when congested, so firms can charge a price. Technology, such as encrypted TV signals, can also make goods excludable, and some public goods are supplied by firms paid by the government or by sponsors. In conclusion, pure public goods will not be provided by a market economy without government funding, but quasi-public goods can be.
3(b)	In a market economy resources are allocated by the price mechanism, through demand and supply, with no government intervention. In a mixed economy both the market and the government allocate resources. For most private goods, such as

Question number

clothes or phones, the price mechanism works well: consumers know the benefits, so demand reflects their value and firms supply the quantity where price equals cost.

Merit and demerit goods are different because of imperfect information. Consumers underestimate the benefits of merit goods, such as education and health care, so they are under-consumed, and they underestimate the harm of demerit goods, such as cigarettes and alcohol, so they are over-consumed. Merit goods often have positive externalities, so the marginal social benefit is above the marginal private benefit.



In a market economy, the output of a merit good is Q_m, where MPB = MPC, below the social optimum Q^*, so there is a welfare loss shown by the shaded area. The poor may be unable to afford the good at all. With demerit goods, overconsumption causes ill health and negative externalities such as crime, and there is nothing to correct it. So the consequences of imperfect information are serious: an inefficient allocation of resources, lower productivity and greater inequality.

In a mixed economy the government can reduce these consequences. It can provide merit goods free or subsidise them, make education compulsory, tax or ban demerit

Question number

goods, and provide information through campaigns and labelling, moving consumption towards Q^*.

However, government intervention has its own problems. The government also has imperfect information, so it may set the wrong subsidy or tax; state provision can be inefficient, and taxes on demerit goods may be regressive or create black markets, which is government failure. A market economy also has some solutions, such as charities, consumer reviews and firms selling information.

On balance, the consequences of imperfect information are more serious in a market economy, because nothing systematically corrects the under-consumption of merit goods and over-consumption of demerit goods. For other private goods, imperfect information is a smaller problem in either system. A mixed economy reduces the problem, but only if government intervention is well informed and well designed.

4(a) The terms of trade measure the ratio of the average price of a country's exports to the average price of its imports:

ToT = (index of export prices ÷ index of import prices) × 100

The balance of trade in goods is the value of exports of goods minus the value of imports of goods. So the terms of trade compare prices, while the balance of trade compares total values (price × quantity).

An improvement in the terms of trade means each unit of exports buys more imports, which can raise living standards and reduce imported cost-push inflation, but if it is caused by higher export prices, exports become less competitive and the balance of trade may worsen. A deficit on the balance of trade means a net leakage from the circular flow, so it reduces aggregate demand, growth and employment, and it must be financed by borrowing or selling assets, which may cause the currency to depreciate.

An economy should usually be more concerned about its balance of trade, because

Question number

a persistent deficit directly affects output, jobs and debt, whereas a change in the terms of trade matters mainly through its effect on the balance of trade, which depends on the price elasticities of demand. However, for a country exporting primary products whose prices are volatile, a fall in the terms of trade can be a serious problem. On balance, the balance of trade in goods is the bigger concern for most economies.

4(b) The terms of trade are the ratio of average export prices to average import prices × 100. A rise means export prices have risen relative to import prices; a fall means they have fallen. For an open economy heavily dependent on international trade, exports and imports are a large share of GDP, so the effects on growth, employment, inflation and the current account are large.

A rise in the terms of trade means each unit of exports buys more imports. If the economy imports much of its food, fuel and raw materials, these become relatively cheaper, which reduces cost-push inflation and raises living standards. If the rise is caused by strong world demand for its exports, as when commodity prices rise, export revenue increases, raising aggregate demand, economic growth and employment. However, if the rise is caused by higher domestic costs or an appreciation, exports become less competitive. If demand for exports is price elastic, export revenue falls and cheaper imports rise, so the current account worsens, output falls and unemployment rises.

A fall in the terms of trade means exports are relatively cheaper. If demand for exports is price elastic, export volumes and revenue rise, boosting aggregate demand, growth and jobs and reducing a current account deficit. However, imports become relatively dearer. If the economy depends on imported essentials with price inelastic demand, import spending rises, causing imported cost-push inflation and a worse current account. A fall can also be a sign of weakness, for example falling world demand for its main export, which reduces growth.

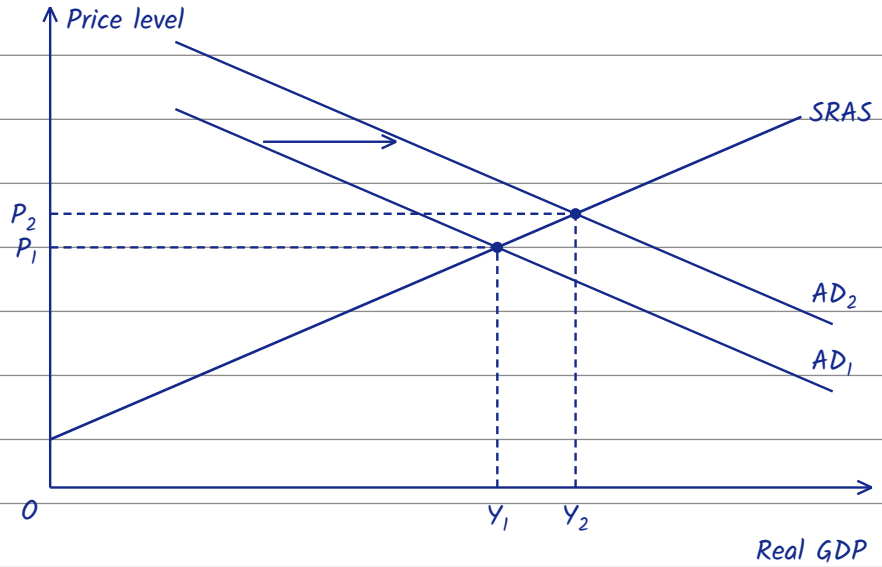
Question number

Which is more beneficial depends mainly on the price elasticities of demand for exports and imports. When both are elastic, a fall in the terms of trade is likely to improve the current account and growth; when they are inelastic, a rise is likely to be better. It also depends on the cause: a rise caused by higher world demand for exports is clearly beneficial, while one caused by higher domestic inflation is harmful. The more dependent the economy is on imported raw materials, the more a fall harms it through inflation; the effects also differ between the short run and the long run, as elasticities rise over time.

In conclusion, neither a rise nor a fall is always beneficial. For a trade-dependent economy, a rise in the terms of trade caused by strong demand for its exports is the most likely to improve overall macroeconomic performance, while a fall only helps if demand for its exports and imports is price elastic.

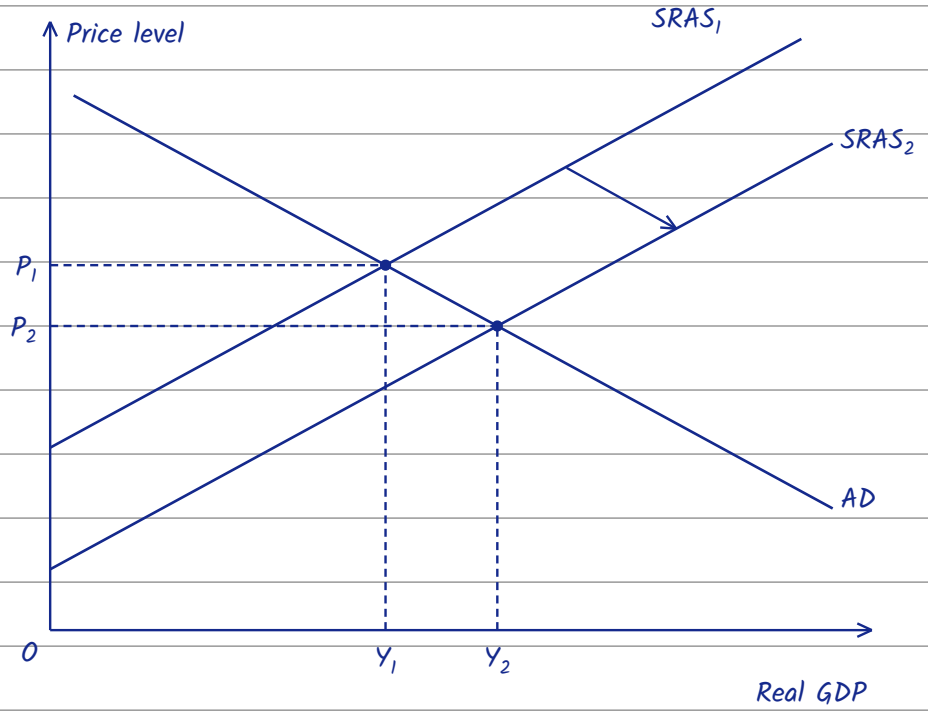
5(a) Aggregate demand (AD) is the total planned spending on an economy's goods and services at each price level: $AD = C + I + G + (X - M)$. Aggregate supply (AS) is the total output that producers are willing and able to supply at each price level.

An increase in AD can be caused by a cut in interest rates, which makes borrowing cheaper so that consumption and investment rise. AD shifts right from AD_1 to AD_2, so real GDP rises from Y_1 to Y_2 and the price level rises from P_1 to P_2.



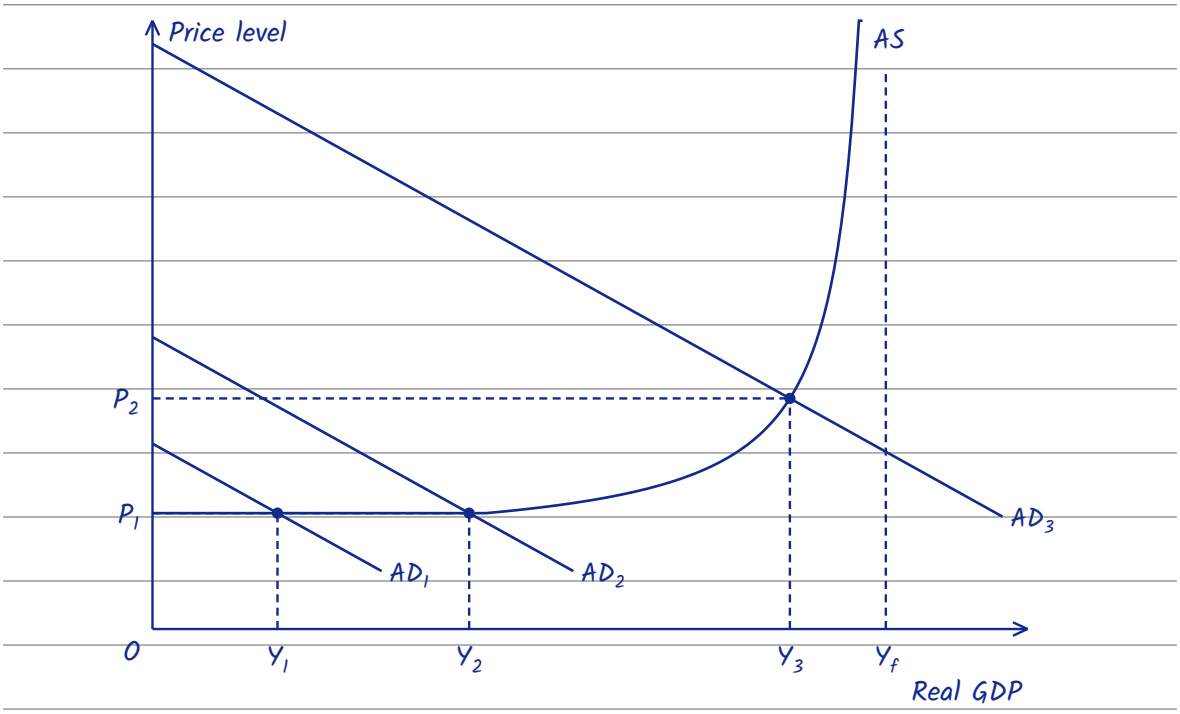
Question number

An increase in AS can be caused by an improvement in technology or education and training, which raises labour productivity and reduces costs per unit. SRAS shifts right from $SRAS_1$ to $SRAS_2$, so real GDP rises to Y_2 and the price level falls to P_2.



An increase in AD does not always lead to inflation. It depends on the position on the AS curve. When there is a lot of spare capacity and unemployment, firms can increase output without higher costs, so a shift from AD_1 to AD_2 raises real GDP with no rise in the price level. Close to full capacity Y_f, resources are scarce, so a shift to AD_3 mainly raises the price level to P_2.

Question number



It also depends on whether AS rises at the same time. If investment increases both AD and capacity, output can grow without inflation. So an increase in AD leads to inflation only when the economy is near full capacity and AS does not increase at the same rate.

5(b) Inflation is a sustained rise in the general price level. Internal effects are those on the domestic economy; external effects are those on its international trade. Internal effects: inflation redistributes income. People on fixed incomes, such as pensioners, and savers whose interest rate is below the inflation rate lose, while borrowers gain because the real value of their debts falls. Firms face menu costs, the cost of frequently changing price lists, and consumers face shoe leather costs from holding less cash and searching for the best interest rates. Uncertainty about future prices makes planning difficult, so firms may delay investment, which reduces long-run growth. If incomes do not keep up, real incomes fall, and fiscal drag pushes people into higher tax brackets. However, mild inflation can be a sign of rising demand and growth, and it can encourage firms to expand output as profits rise.

Question number

External effects: if a country's inflation is higher than its trading partners', its exports become less price competitive and imports become relatively cheaper. If demand for exports and imports is price elastic, export revenue falls and import spending rises, so the current account worsens, and aggregate demand, output and jobs in exporting and import-competing industries fall. The fall in demand for the currency may cause it to depreciate, which raises import prices and adds to inflation. However, if demand for exports is price inelastic, export revenue rises and the terms of trade improve.

Which effects are more serious depends on several factors. In a very open economy, heavily dependent on trade, the external effects on competitiveness, the current account and the exchange rate are likely to be large. If trading partners have similar inflation rates, competitiveness hardly changes, so the external effects are small, while the internal effects still occur. A floating exchange rate can offset lost competitiveness by depreciating. The internal effects also depend on whether inflation is anticipated: if wages, pensions and interest rates are index-linked, the redistribution is limited.

The rate of inflation matters most. At low and stable rates, both sets of effects are small. At high and unpredictable rates, uncertainty and the redistribution from savers hit every household and firm, and in hyperinflation money stops working as a medium of exchange.

In conclusion, for most economies the internal effects are more serious, because they affect everyone and reduce investment and growth, whereas the external effects can be offset by exchange rate changes. For a small, highly open economy with a fixed exchange rate, however, the external effects on the current account may be the more serious.

Cambridge Assessment International Education

Cambridge International AS & A Level

ECONOMICS **9708/23**

Paper 2 AS Level Data Response and Essays **October/November 2023**

2 hours

0189113471

You must answer on the enclosed answer booklet.

You will need: Answer booklet (enclosed)

INSTRUCTIONS

- Answer **three** questions in total:
  - Section A: answer Question 1.
  - Section B: answer **one** question.
  - Section C: answer **one** question.
- Follow the instructions on the front cover of the answer booklet. If you need additional answer paper, ask the invigilator for a continuation booklet.
- You may use a calculator.
- You may answer with reference to any economy you have studied where relevant to the question.

INFORMATION

- The total mark for this paper is 60.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **4** pages.

DC (PQ/FC) 321435/1
© UCLES 2023

[Turn over

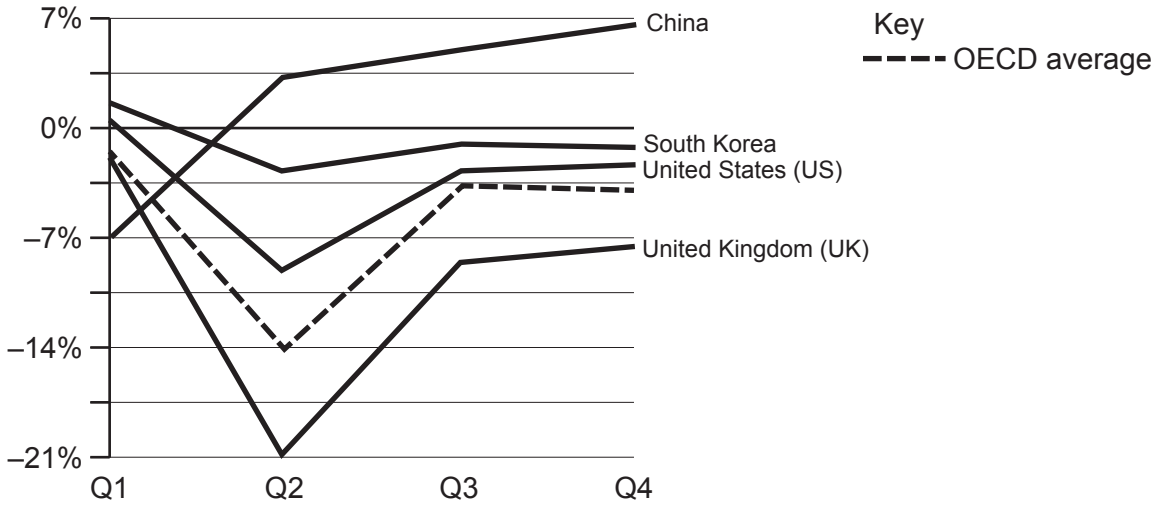
stemup.co.uk

Section A

Answer all parts of Question 1.

1 Varied responses to the COVID-19 pandemic

The COVID-19 pandemic had a very significant impact on the global economy in 2020. Negative economic growth rates were recorded for all major economies. The speed, unexpected and unprecedented nature of the downturns has been devastating for businesses, governments and populations. Individual economies reacted to the pandemic differently. Fig. 1.1 shows quarterly economic growth rates in 2020 for four selected countries compared to the OECD (Organisation for Economic Co-operation and Development) average.



Source: OECD, 2021

Fig. 1.1 Annual change to quarterly gross domestic product (GDP) in selected countries in 2020 compared to the OECD average.

China's economic performance in 2020 was the exception. China was the first country to experience the pandemic. It has also been the first economy to recover from recession, a period of two consecutive quarters of negative economic growth. The Chinese government was quick to enforce lockdowns to limit the pandemic and there was rapidly increasing demand for exports of PPE (personal protection equipment) and other Chinese-made products.

The case of neighbouring South Korea was different. Like China, the impact of the pandemic was more effectively contained than in other economies and growth in South Korea's economy was less affected. There was, however, little evidence in the data that by the end of 2020, South Korea's economy would recover to its pre-2019 position of strong economic growth.

The economies of the US and the UK had negative quarterly economic growth throughout 2020. Economists in these countries have disagreed about how best to increase the rate of economic growth after the pandemic. The governments of both countries introduced very high government spending programmes to encourage the return to economic growth in 2021. However, monetary policies have been widely promoted by many economists as an alternative to more traditional fiscal measures.

Source: OECD

© UCLES 2023

stemup.co.uk

(a) Explain the meaning of 'negative economic growth'. [2]

(b) Which country shown in Fig. 1.1 experienced the most severe recession in 2020? Justify your answer. [2]

(c) State **two** likely economic reasons why China experienced strong economic growth starting in the second quarter of 2020 and consider which of these is likely to have generated the greater rate of growth. [4]

(d) Assess how economic recovery is likely to have affected employment and price stability in China. [6]

(e) Assess whether monetary policies are the best way for high-income countries such as the US and the UK to produce an economic recovery. [6]

Section B

Answer **one** question.

EITHER

2 **(a)** The price elasticity of supply (PES) for a new smartphone is estimated to be 0.8 in the short run and 1.8 in the long run.

Explain what these estimates mean for producers and consumers of smartphones **and** consider why the estimates differ. [8]

(b) Assess whether knowledge and understanding of price elasticity of demand (PED) or cross elasticity of demand (XED) is likely to be more useful to a producer of smartphones. [12]

OR

3 **(a)** Explain why the provision of bus and local rail (mass transit) services in cities is classified as a private good not a public good **and** consider why such services might only be provided by the private sector. [8]

(b) Assess whether bus and local rail systems in cities should receive substantial subsidies from governments. [12]

© UCLES 2023

stemup.co.uk

Section C

Answer **one** question.

EITHER

4 **(a)** With reference to a country that is known to you, explain the main causes of unemployment **and** consider which of these causes is most significant. [8]

(b) Assess whether supply-side policy is the only way of reducing long-term unemployment in an economy. [12]

OR

5 **(a)** Explain how import tariffs might correct an imbalance in the current account of the balance of payments **and** consider whether these tariffs are the best way of correcting such an imbalance. [8]

(b) A country has a persistent deficit on the current account of its balance of payments.

Assess the likely consequences for the domestic and external economy of this country. [12]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of Cambridge Assessment. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which is a department of the University of Cambridge.

© UCLES 2023

stemup.co.uk

Surname	StemUp Model Solution
Answer booklet	Write the question number in the left-hand margin at the start of each answer.

Question number

Answers for paper 9708/23

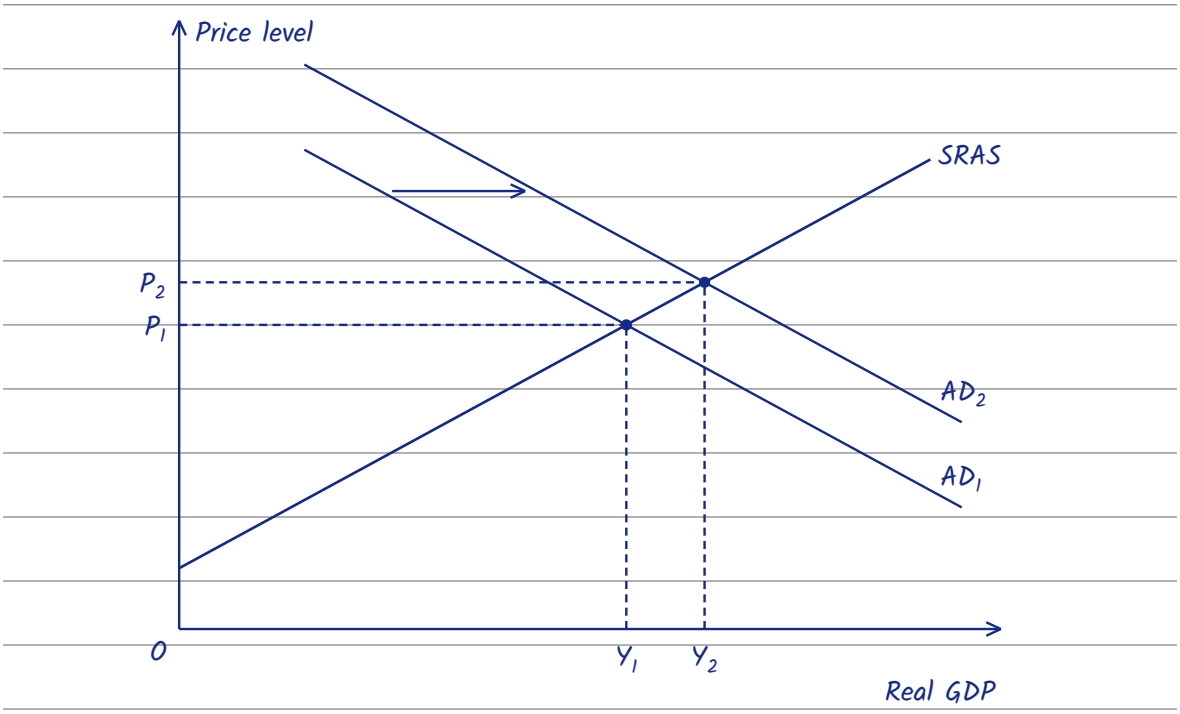
1(a) Negative economic growth is a fall in a country's national income or real output, measured by a fall in real GDP, for example the falls in quarterly GDP shown for the UK and US in 2020.

1(b) The United Kingdom. It had the biggest percentage fall in GDP, about −21% in Q2, and its GDP fell in every quarter, staying below the OECD average, while the other three countries performed better than the OECD average.

1(c) 1. Rapidly increasing demand for exports of PPE and other Chinese-made products.
2. China was the first to experience the pandemic and the government was quick to enforce lockdowns, so it contained the virus and was the first to recover.
The rise in export demand is likely to have generated the greater growth. Exports are an injection into the circular flow, so through the multiplier they raise output and incomes by more than the initial spending, whereas lockdowns only allowed normal production to restart. Rising world demand for PPE helped GDP growth climb to about 7% by Q4.

1(d) As China recovered, growth rose from about −7% in Q1 to about +7% in Q4.
Rising consumption, investment and especially exports (AD = C + I + G + X − M) shift aggregate demand to the right. Labour is a derived demand, so firms take on more workers to produce more output, and cyclical unemployment falls, with further jobs created through the multiplier.

Question number



The effect on price stability depends on the position on the AS curve. Early in the recovery there is spare capacity, so output can rise with little increase in the price level. As the economy approaches full capacity, shortages of labour and materials push up costs and AD rises faster than AS, so demand-pull and cost-push inflation increase, as shown by the rise from P_1 to P_2.

The effects depend on the speed and size of the recovery. Because China's recovery was rapid and export-led, employment is likely to have risen strongly, but since output was only returning to its pre-pandemic level, there was still spare capacity, so inflation is likely to have stayed low. Overall, the recovery most likely raised employment significantly with only a small threat to price stability.

1(e) Monetary policy is the use of interest rates, the money supply and credit to influence aggregate demand. An expansionary policy cuts interest rates or increases the money supply, for example through quantitative easing or relaxing credit restrictions. Borrowing becomes cheaper and saving less rewarding, so consumption and investment rise; lower interest rates also tend to cause the exchange rate to depreciate, making exports more price competitive. AD shifts right, raising output

Question number

and jobs.

However, monetary policy has drawbacks. It depends on confidence: in a deep recession, consumers and firms may not borrow even at very low rates, and interest rates in the US and UK were already close to zero, so there was little room to cut them. It works with long time lags, may cause inflation and makes imports dearer if the currency depreciates.

The alternative is fiscal policy. The very high government spending programmes in both countries inject spending directly into the economy and can be targeted at particular sectors, so they work faster, but they increase budget deficits and national debt.

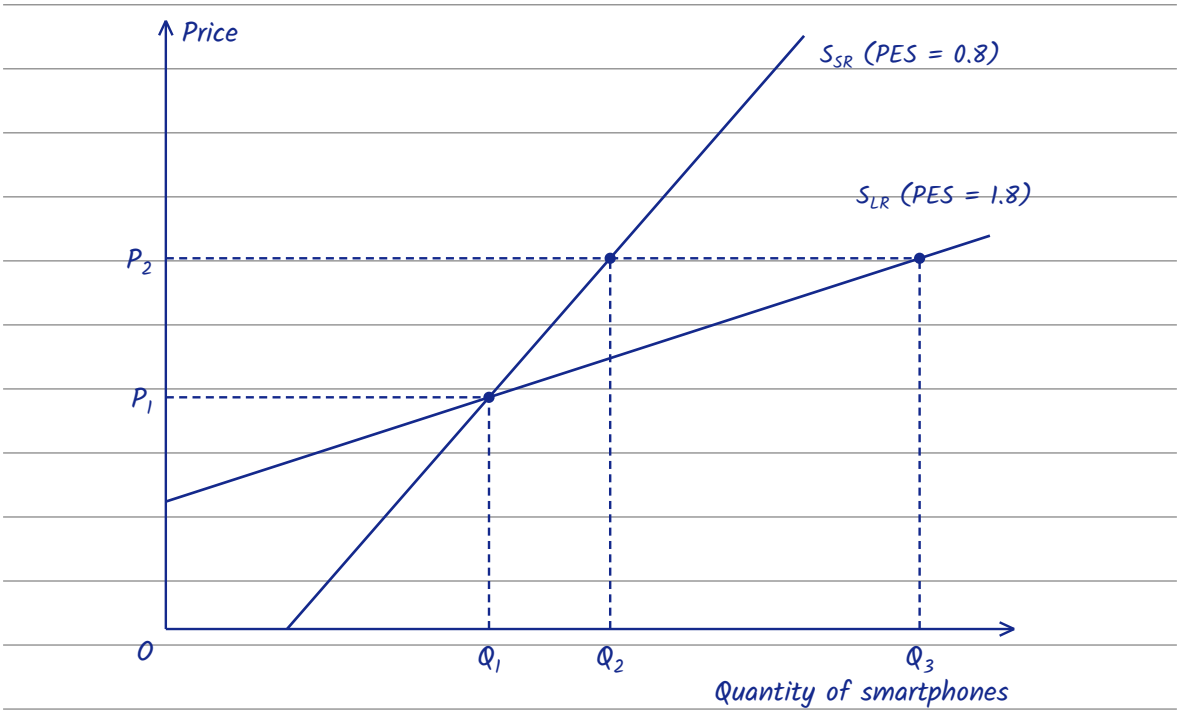
Whether monetary policy is best depends on how interest sensitive consumption and investment are and on how low interest rates already are. In conclusion, monetary policy alone is unlikely to be the best way: in a recession as deep as the UK's, it is most effective when combined with expansionary fiscal policy, with monetary policy keeping borrowing costs low.

2(a) Price elasticity of supply (PES) measures the responsiveness of the quantity supplied to a change in the price of the product.

PES = % change in quantity supplied ÷ % change in price

A PES of 0.8 in the short run means supply is price inelastic: a 10% rise in price leads to only an 8% rise in quantity supplied. A PES of 1.8 in the long run means supply is price elastic: a 10% rise in price leads to an 18% rise in quantity supplied.

Question number



The estimates differ because of time. In the short run, producers have fixed capacity: factories, machinery and specialist components such as chips cannot be increased quickly, and stocks of a new model are low, so output can only rise from Q_1 to Q_2. In the long run, producers can build new production lines, hire and train workers and sign contracts with more suppliers, so output can rise to Q_3.

For producers, inelastic supply in the short run means they cannot take full advantage of high demand at launch, but they can charge a high price; in the long run they can expand output and sales. For consumers, a rise in demand in the short run leads mainly to higher prices and shortages, while in the long run the price rise is smaller and availability better. The size of the difference depends on how quickly producers can expand capacity and on the availability of components.

2(b)

Price elasticity of demand (PED) measures the responsiveness of quantity demanded to a change in a good's own price: PED = % change in quantity demanded ÷ % change in price. Cross elasticity of demand (XED) measures the responsiveness of the demand for one good to a change in the price of another: XED = % change in quantity demanded of good A ÷ % change in price of good B.

Question number

PED is useful to a smartphone producer for setting prices to maximise revenue. If demand for a model is price elastic, for example a mid-range phone with many close substitutes, a price cut raises total revenue. If demand is price inelastic, for example a premium brand with loyal customers, a price rise increases revenue. PED also shows how much of a rise in costs, such as a tax or higher chip prices, can be passed on. However, PED values are only estimates, they change over time, for example as a new phone becomes older, and they vary along the demand curve.

XED is useful because it shows the relationship between the producer's phones and other products. A high positive XED with a rival's phone shows a close substitute, so the producer must react quickly to a rival's price cut or it will lose many sales, and it can gain sales when a rival raises its price. A negative XED shows a complement, such as apps, cases or mobile data contracts, so the producer may cut the price of the phone to sell more complementary products, or bundle them. However, other factors, such as brand loyalty, design and network effects, may matter more than rivals' prices, and XED values are difficult to estimate because the firm cannot observe rivals' sales data.

PED is likely to be more useful because the producer controls its own price, and PED tells it directly how revenue will respond. It is also easier to estimate from its own sales data. XED is important in a highly competitive smartphone market, but the producer cannot control rivals' prices. The usefulness of both depends on the accuracy of the estimates, and the producer would also need income elasticity of demand (YED) to predict sales as incomes change.

In conclusion, knowledge of PED is likely to be more useful to a smartphone producer for its main pricing decisions, while XED is a useful supplement for responding to rivals and pricing complements.

3(a) A good is excludable if people who do not pay can be prevented from consuming it, and non-excludable if they cannot. A good is rival if one person's consumption

Question number

reduces the amount available to others, and non-rival if it does not. Private goods are excludable and rival; public goods are non-excludable and non-rival.

Bus and local rail services are excludable because passengers must buy a ticket before boarding, and those who do not pay can be refused travel. They are rival because each seat or space taken by one passenger cannot be used by another, and at busy times a full bus means others cannot travel. So they are private goods.

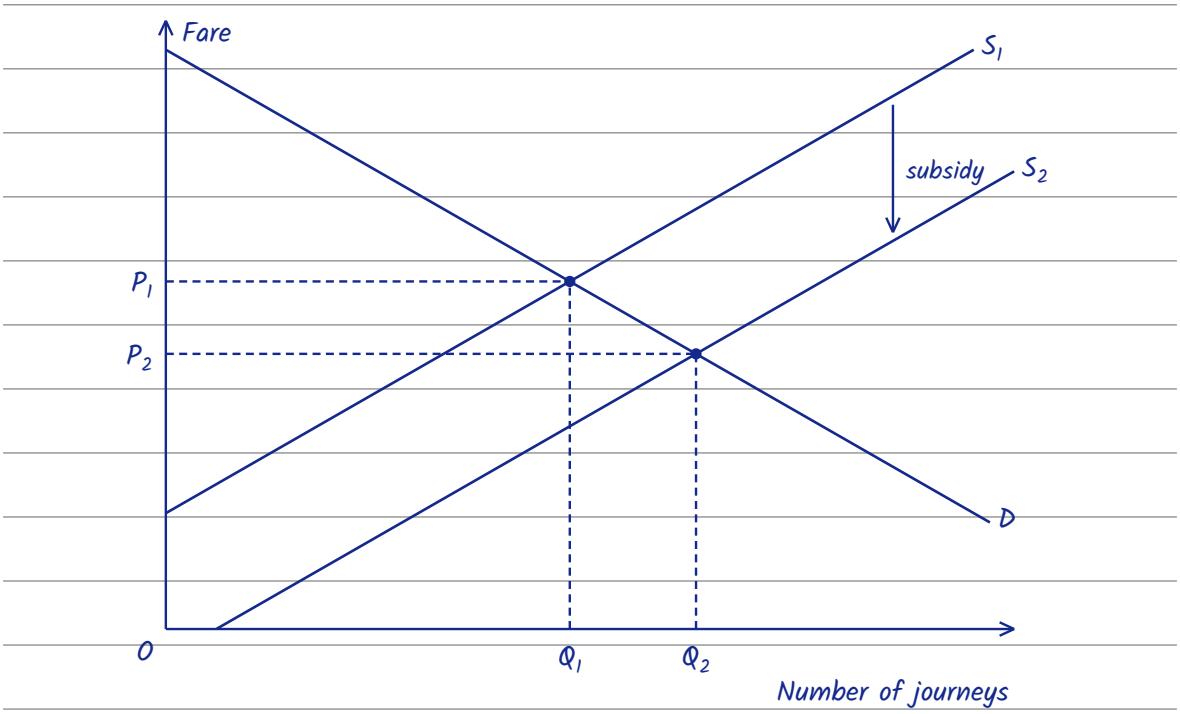
They are not public goods, because there is no free rider problem: as non-payers can be excluded, firms can charge a fare and make a profit, so the market can provide them without the government having to supply them.

This explains why such services might be provided only by the private sector, which is likely to be more efficient because of the profit motive and competition. However, private firms may only run profitable routes and charge high fares, and mass transit has positive externalities, such as less congestion and pollution, and is like a merit good for low-income workers, so it may be under-provided. In conclusion, it can be provided privately, but many governments regulate, subsidise or provide it to ensure an adequate service.

3(b)

A subsidy is a payment by the government to producers to reduce their costs of production. It shifts the supply curve down and to the right by the amount of the subsidy per unit, from S_1 to S_2, so the fare falls from P_1 to P_2 and the number of journeys rises from Q_1 to Q_2.

Question number



There are strong arguments for substantial subsidies. Mass transit creates positive externalities: each person who takes the bus instead of a private car reduces road congestion, air pollution and carbon emissions, and accidents. Car use itself has negative externalities, so lower fares encourage people to switch. Cheap transport is like a merit good for low-income families, who often do not own a car, so it gives them access to jobs, education and health care and reduces inequality. It also improves the geographical mobility of labour, reducing unemployment and raising productivity, and allows unprofitable but socially important routes to run.

However, there are disadvantages. Subsidies have an opportunity cost, as the money could be spent on health or education, or must come from higher taxes or borrowing. The government has imperfect information, so it may set the subsidy at the wrong level, leading to over-provision. Subsidised operators have less incentive to control costs and improve efficiency, and they may become dependent on the subsidy. If demand for public transport is price inelastic, because many people prefer the convenience of their car, lower fares will have only a small effect on car use.

Whether subsidies should be substantial depends on the size of the external

Question number

benefits, which are greatest in large, congested and polluted cities, and on the price elasticity of demand. It also depends on the government's budget position and whether other policies, such as congestion charges or fuel taxes, could achieve the same aim and raise revenue rather than cost money.

In conclusion, bus and local rail systems in large cities should receive substantial subsidies because the social benefits are large, but the subsidy should be targeted at reducing fares and improving the service, combined with measures to discourage car use, and linked to efficiency targets.

4(a) Unemployment is when people of working age who are willing and able to work, and actively seeking work, cannot find a job. In the United Kingdom there are several types.

Cyclical unemployment is caused by a lack of aggregate demand in a recession. In 2020 the COVID-19 pandemic left UK GDP in Q2 about 21% lower than a year earlier, so firms cut output and the derived demand for labour fell, especially in hospitality and retail.

Structural unemployment is caused by long-term changes in the pattern of demand or production. In the UK, the decline of coal mining, steel and manufacturing in areas such as the North East and Wales left workers with skills no longer needed, and occupational and geographical immobility kept them unemployed. Today automation and online shopping are causing similar job losses in retail.

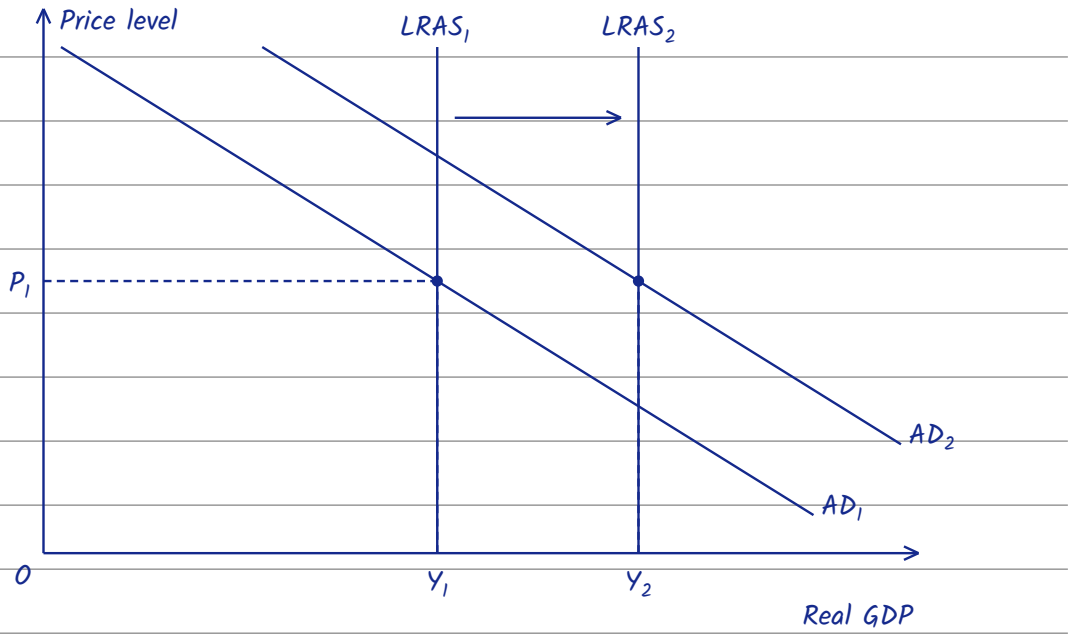
Frictional unemployment occurs as people move between jobs and is usually short term.

Structural unemployment is the most significant cause in the UK in the long run, because it is concentrated in particular regions and lasts for years, while cyclical unemployment in 2020 was reduced by the furlough scheme and fell quickly as the economy recovered. However, in a deep recession cyclical unemployment is the

Question number

most significant cause in the short run.

4(b) Long-term unemployment is when people have been out of work for a long period, usually more than a year. Supply-side policies aim to increase the productive capacity of the economy by improving the quantity and quality of factors of production and the way markets work. They shift LRAS to the right.



Supply-side policies are well suited to long-term unemployment, which is often structural. Education, training and retraining schemes give workers the skills that growing industries need, reducing occupational immobility; job centres and online vacancy information reduce search time; help with relocation or housing reduces geographical immobility; and lower taxes, grants and deregulation encourage business start-ups and investment, creating jobs in depressed areas. As LRAS shifts from $LRAS_1$ to $LRAS_2$, output rises without inflation, which is an advantage over demand-side policy.

However, supply-side policies take a long time to work, are costly and have an opportunity cost, and their success depends on workers being willing to retrain or move. Cutting unemployment benefits to increase the incentive to work may increase poverty. Above all, training does not create jobs if there is a lack of

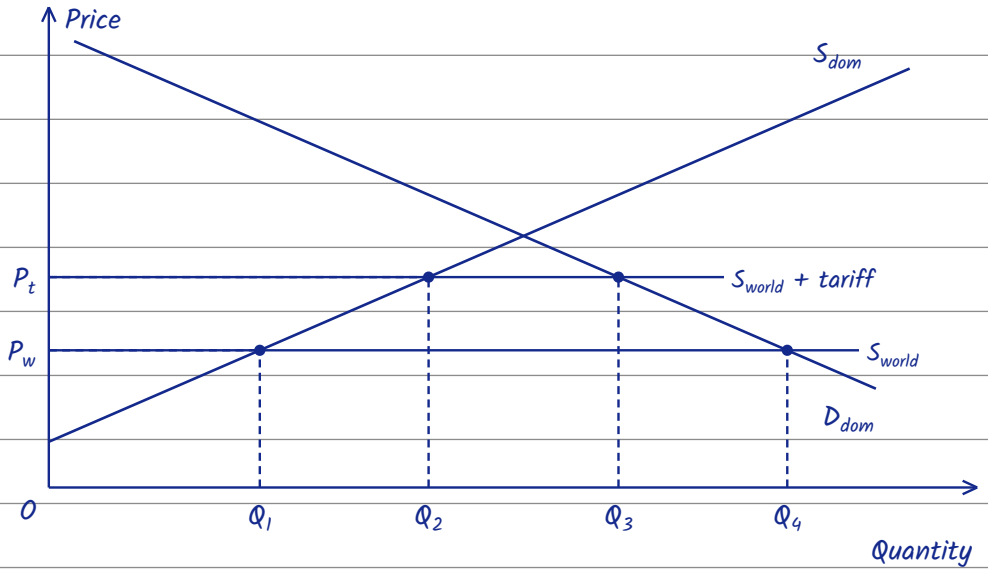
Question number

demand: if long-term unemployment started as cyclical unemployment in a deep recession, workers can be retrained but there may be no vacancies.

Demand-side policies can also reduce long-term unemployment. Expansionary fiscal policy, such as higher spending on infrastructure, or expansionary monetary policy, such as lower interest rates, raises aggregate demand, and through the multiplier creates jobs for all types of worker, so it stops cyclical unemployment becoming long term. However, it may cause inflation if the economy is near full capacity, it increases the budget deficit, and it does little for workers whose skills are out of date. Policies such as wage subsidies to firms that hire the long-term unemployed can also help.

In conclusion, supply-side policy is not the only way of reducing long-term unemployment. It is the most effective for structural unemployment, but where long-term unemployment is caused by a lack of demand, demand-side policies are needed, and the best approach is usually a combination of both.

5(a) An import tariff is a tax on imported goods. The current account of the balance of payments records trade in goods and services, primary income and secondary income. An imbalance is a deficit, when outflows exceed inflows, or a surplus, when inflows exceed outflows.



Question number

A tariff raises the price of imports from P_w to P_t. Domestic consumers buy less, so consumption falls from Q_4 to Q_3, and they switch to domestic producers, whose output rises from Q_1 to Q_2. Imports fall from Q_1Q_4 to Q_2Q_3, so if import spending falls, the current account deficit is reduced.

However, the effect is uncertain. If demand for imports is price inelastic, for example for essential fuel or raw materials with no domestic substitute, the quantity of imports falls only a little and spending may even rise. Trading partners may retaliate with their own tariffs, reducing exports. Tariffs also break WTO rules, raise prices and costs for firms, and protect inefficient producers.

Other policies may be better, such as supply-side policies to make exports more competitive, or expenditure-reducing fiscal and monetary policy. In conclusion, tariffs can reduce a deficit in the short term, but they are not the best way, because of retaliation and inefficiency.

5(b)

The current account records trade in goods and services, primary income and secondary income. A persistent deficit means that, year after year, the value of payments abroad is greater than receipts, usually because imports exceed exports.

Domestic economy: imports are a leakage and exports an injection, so a deficit means net exports are negative, which reduces aggregate demand. With the multiplier, this lowers economic growth and output, and firms in export and import-competing industries lose sales, so unemployment rises, often structural unemployment as industries decline. Lower demand may reduce inflation, and cheap imports raise living standards in the short run as consumers enjoy more goods. However, lower incomes reduce tax revenue, worsening the government budget, and business confidence and investment may fall. The government may have to use deflationary policies to reduce imports, which lowers growth further.

External economy: the deficit must be financed by a surplus on the financial account, either by borrowing from abroad or by selling assets to foreigners, or by

Question number

using foreign currency reserves. This increases foreign debt and future interest payments, which add to the deficit on primary income. Because the demand for the currency is lower than the supply, a floating exchange rate will depreciate. This makes exports cheaper and imports dearer, which may help to correct the deficit, but raises import prices and causes cost-push inflation. Under a fixed exchange rate, reserves run down and the country may face a currency crisis or need loans from the IMF.

The seriousness of these consequences depends on the cause and size of the deficit. If it is caused by imports of capital goods for investment, it will raise future productive capacity and exports, so it is less of a problem. If it is caused by consumer spending and uncompetitive industries, it is more serious. A small deficit, of say 1% of GDP, financed by long-term foreign direct investment is sustainable, while a large one financed by short-term borrowing is not. It also depends on the price elasticities of demand for exports and imports, which decide whether depreciation corrects it.

In conclusion, the most likely consequences of a persistent deficit are slower growth and higher unemployment at home, and rising foreign debt and a depreciating currency externally. The external consequences are often more serious in the long run, because they can lead to a loss of confidence, but the overall effect depends on the cause and the size of the deficit.