Cambridge Assessment International Education

Cambridge International AS & A Level

ECONOMICS **9708/21**

Paper 2 Data Response and Essay **May/June 2020**

1 hour 30 minutes

6680877584

You must answer on the enclosed answer booklet.

You will need: Answer booklet (enclosed)

INSTRUCTIONS

- Answer **two** questions in total:
  - Section A: answer Question 1.
  - Section B: 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 40.
- The number of marks for each question or part question is shown in brackets [ ].

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Section A

Answer this question.

1 The Lagos economy is working

Nigeria discovered oil 50 years ago and is now the world's sixth biggest oil exporter. The recent increase in global oil prices has had a very large positive effect on the country's balance of trade and has also improved the country's terms of trade.

Lagos is the largest city in Nigeria, with a population of over 20 million, and has undergone a successful economic transformation in recent years. It has used the private sector to become the most productive and dynamic part of Nigeria's economy. The owner of one of Nigeria's largest companies has stressed the enormous economic progress that the country has made in recent years: "I'm a great believer in Nigeria because the opportunities here are enormous." His company's success shows what private enterprise can achieve in a mixed economy especially if it is provided with the right incentives by the government.

Most Nigerian entrepreneurs are operating in Lagos and entrepreneurship has certainly played a key role in the modern Lagos economy. Start-up initiatives have been encouraged and the need to be innovative has been increasingly recognised, leading to the development of new goods, services and markets. The city is the centre of thriving music, fashion, film and technology industries that have significant influence throughout Africa.

A 'free trade zone' on the edge of Lagos has been established where private sector firms pay no business taxes to the government and there are now numerous start-up enterprises that are thriving. The government aims to lower costs, reduce bureaucracy and make the economy more flexible and efficient with the hope of boosting trade. The zone is located next to a deep sea port and has good road connections with both the rest of Nigeria and other countries in the region.

Lagos is an important transport hub, with three major ports and West Africa's most important international airport. In 2016 the output of Lagos was valued at US$136 billion while Nigeria's total national output was valued at US$405 billion.

A former governor of the Nigerian central bank, has stated: "Since 2000, Lagos has been transformed. In terms of an improved infrastructure and a supportive economic environment, the government has given firms a greater opportunity to thrive."

Source: Adapted from The Financial Times, 26 March 2018

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(a) Calculate the percentage of Nigeria's national output that is accounted for by Lagos. [1]

(b) Distinguish between a country's balance of trade and its terms of trade. [3]

(c) Explain the contribution of the factor enterprise to the successful economic transformation of Lagos. [4]

(d) **(i)** Explain why 'free trade zones' (FTZ) can be considered a supply-side policy. [2]

(ii) Explain how measures to reduce protection through policies such as 'free trade zones' encourage specialisation and the development of comparative advantage in Nigeria. [4]

(e) Discuss whether government intervention to encourage private sector firms, in a mixed economy such as Nigeria, is always likely to be successful. [6]

Section B

Answer **one** question.

2 **(a)** Explain, with the aid of a production possibility curve (PPC) diagram, why scarcity makes choice inevitable for firms and how each choice has an opportunity cost. [8]

(b) Discuss the view that the only goods a government should produce are public goods. [12]

3 There is increasing concern about the impact of foreign holidays on the environment of the host country.

(a) Explain, with the aid of a demand and supply diagram, **two** factors that might cause an increase in the demand for foreign holidays. [8]

(b) Discuss whether an indirect tax on foreign holidays is likely to be effective in reducing the number of holidays taken. [12]

4 **(a)** Explain, with the aid of a diagram, **one** demand factor and **one** supply factor that can cause the depreciation of a foreign exchange rate. [8]

(b) Discuss whether an appreciation of a country's foreign exchange rate is likely to cause **both** a rise in inflation and a decrease in employment in its economy. [12]

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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) Lagos as a % of national output = (136 ÷ 405) × 100 = 33.6% (to 1 d.p.)

1(b) The balance of trade is the difference between the value of a country's exports of goods (and services) and the value of its imports over a period; for example the higher oil price raised the value of Nigeria's exports, so its balance of trade improved.

The terms of trade measure the relative prices of exports and imports: (index of average export prices ÷ index of average import prices) × 100. So the balance of trade is about values (price × quantity) and money flows, while the terms of trade are only about prices, the quantity of imports one unit of exports can buy.

1(c) Enterprise is the factor of production that organises land, labour and capital, takes the risks of starting and running a business and introduces new ideas, and is rewarded by profit. Entrepreneurs decide what to produce and how, so they turn resources into output.

In Lagos most of Nigeria's entrepreneurs operate, and start-up initiatives have been encouraged. Their innovation has led to the development of new goods, services and markets, creating jobs and output, so Lagos has become the most productive and dynamic part of the economy, producing about a third of national output.

Lagos is now the centre of thriving music, fashion, film and technology industries with influence throughout Africa, which earns export income.

1(d)(i) Supply-side policies aim to increase the productive capacity and efficiency of the

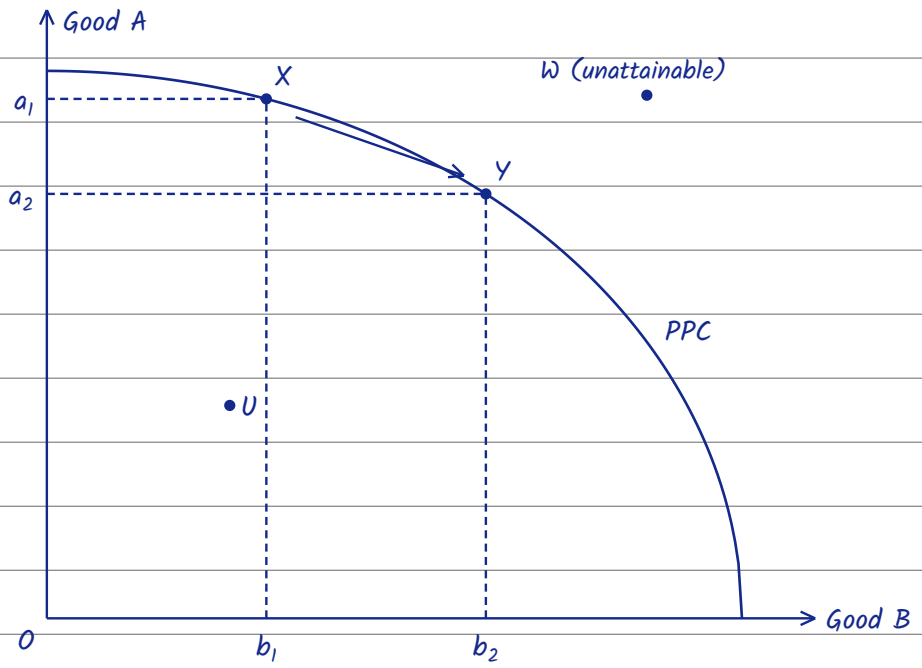
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	economy, shifting LRAS to the right. In the free trade zone firms pay no business taxes, so they keep more profit to invest and expand, and costs and bureaucracy are reduced, making the economy more flexible and efficient. This raises productivity and the quantity firms can supply, so it is a supply-side policy.
1(d)(ii)	Specialisation means a country concentrating on producing the goods it is best at. Lower protection and lower costs in the zone, next to a deep sea port with good road links, make it cheaper to trade, so firms can concentrate on a narrow range of products and sell them to wider markets in the region, gaining economies of scale. Comparative advantage exists when a country can produce a good at a lower opportunity cost than other countries. With less protection, Nigerian resources move out of inefficient protected industries towards the industries where its opportunity cost is lowest, such as oil, film, music and technology services, and it imports the goods others make more cheaply. Competition and lower costs raise productivity in these industries, so the comparative advantage is developed and strengthened over time.
1(e)	Government intervention can be successful. In Lagos the government has improved infrastructure (three major ports, the main airport) and given incentives such as zero business taxes in the free trade zone, so private firms' costs fall and profits rise, encouraging investment and start-ups. The former central bank governor says this has given firms "a greater opportunity to thrive", and Lagos now produces 33.6% of national output. However, it is not always successful. Tax incentives lose government revenue that could fund health or education, and there is an opportunity cost. Firms may only relocate to the zone rather than create new activity, and benefits may stay in Lagos, widening regional inequality. Government failure is possible: officials may

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lack information, choose the wrong industries or suffer from corruption and bureaucracy. Success also depends on the private sector, its entrepreneurs and confidence, and on outside factors such as the world oil price.

In conclusion, intervention that supports private firms is likely to help when it improves infrastructure and incentives, as in Lagos, but it is not always successful because it depends on the quality of government, the response of firms and external conditions.

2(a) A production possibility curve (PPC) shows the maximum combinations of two goods that can be produced when all resources are fully and efficiently employed, with a given state of technology.



Scarcity exists because resources (land, labour, capital and enterprise) are limited while wants are unlimited. On the diagram, combinations outside the PPC, such as W, are unattainable with current resources, so a firm (or economy) cannot have everything it wants. The PPC is the boundary that scarcity creates.

Because of scarcity a choice is inevitable: the firm must decide which point on (or inside) the curve to produce at, for example X or Y, that is how to allocate its

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limited resources between Good A and Good B. A firm making phones and laptops with a fixed workforce and factory must choose how many of each to make. Each choice has an opportunity cost, the next best alternative forgone. If the firm moves from X to Y, it gains b_1b_2 extra units of Good B but must give up a_1a_2 units of Good A; this lost output of A is the opportunity cost. Because the PPC is concave, the opportunity cost rises as more B is produced, since resources are not equally suited to both goods. Only at a point like U, where resources are unused, could more of both be made with no opportunity cost.

2(b) Public goods are goods that are non-excludable (people who do not pay cannot be stopped from consuming them) and non-rival (one person's consumption does not reduce the amount available to others), for example street lighting, national defence and flood defences. Because of the free rider problem, consumers will not reveal their demand and pay, so private firms cannot make a profit and the market will not provide them at all. This is a complete market failure, which is a strong reason why the government must provide public goods, financed by taxation.

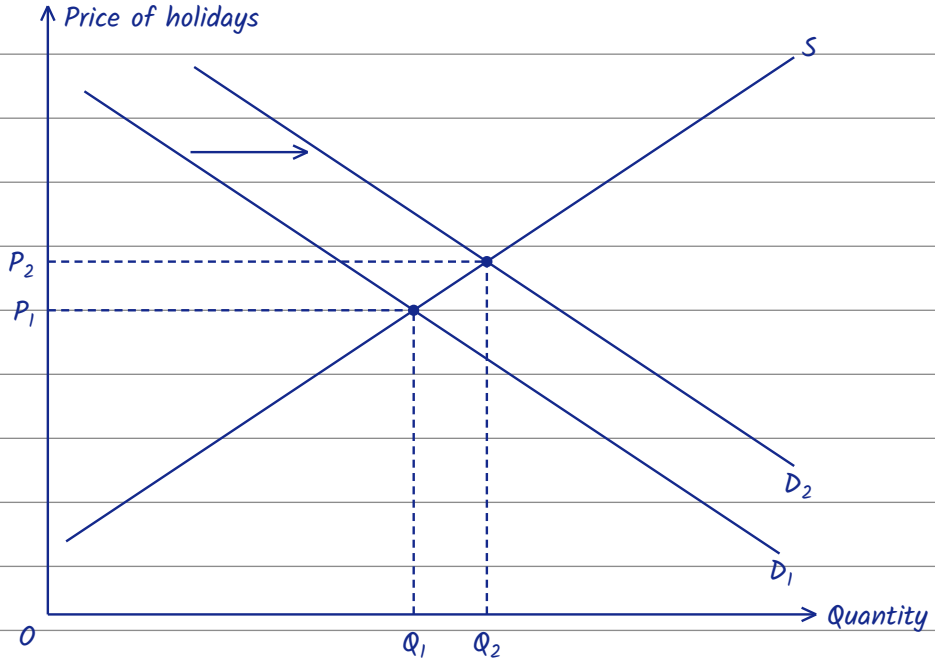
However, the government may also produce other goods. Merit goods, such as education and health care, are under-consumed in a free market because consumers lack information about their full benefits and because they create positive externalities, so MSB > MPB and output is below the socially optimal level. State provision free at the point of use raises consumption towards the optimum and improves equity, since the poor could not otherwise afford them. Governments may also run natural monopolies, such as water supply or railways, where one producer is most efficient and a private firm might charge high prices, and strategic industries such as energy.

On the other hand, there are arguments against wide government production. State firms lack the profit motive and competition, so they may be inefficient (x-inefficiency) and slow to innovate. Governments may lack information about

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what consumers want, leading to government failure, and production must be financed by taxes, which may reduce incentives, or by borrowing. Merit goods can often be dealt with by other policies, such as subsidies to private producers, regulation or information campaigns, without the government producing them itself. In conclusion, the view is too narrow. Public goods are the clearest case for government production because the market will not supply them at all. But for merit goods and natural monopolies the market under-provides or exploits consumers, so some government production can be justified, depending on how efficient the government is and on whether subsidies or regulation could achieve the same result at lower cost.

3(a) Demand is the quantity of a good or service that consumers are willing and able to buy at each price in a period. A change in a factor other than price shifts the whole demand curve.



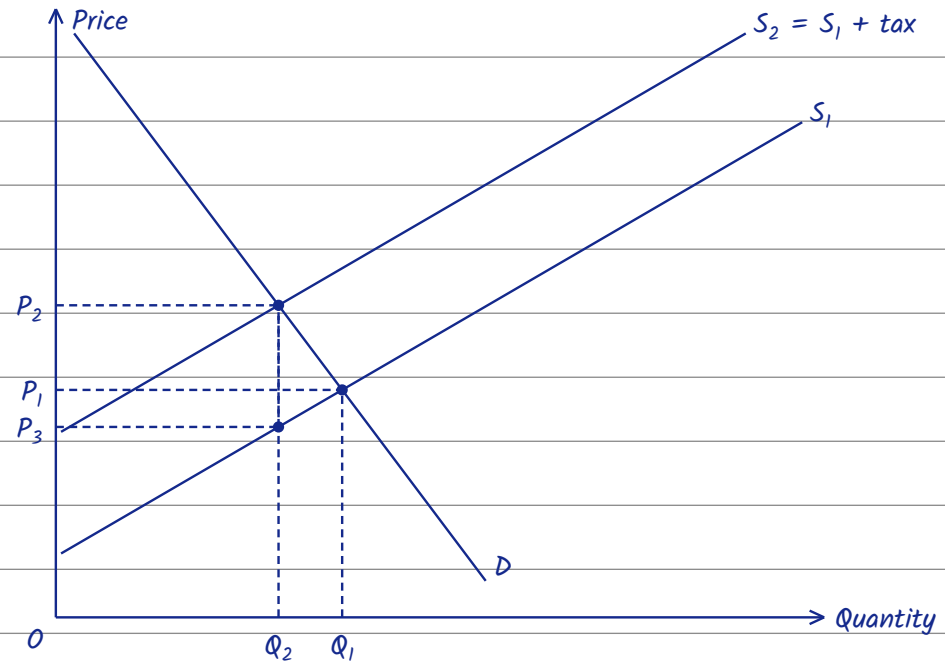
Factor 1: a rise in real incomes. Foreign holidays are a normal good, in fact a luxury with a high positive income elasticity of demand. As incomes rise, more households can afford to travel abroad, so at every price more holidays are

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demanded and demand shifts from D_1 to D_2. With an unchanged supply curve S, the price rises from P_1 to P_2 and the quantity of holidays rises from Q_1 to Q_2.

Factor 2: a fall in the price of a complement, such as air travel. Flights and foreign holidays are jointly demanded, so if low-cost airlines cut fares, the total cost of a holiday falls and demand for foreign holidays increases, again shifting D_1 to D_2. Other factors with the same effect are an appreciation of the home currency, making holidays abroad cheaper, and changes in tastes, for example advertising and social media making travel fashionable.

3(b) An indirect tax is a tax on spending, such as a specific tax per holiday or an ad valorem tax like VAT. It raises the firms' costs, so supply shifts to the left by the amount of the tax, from S_1 to S_2.



The tax can be effective. The price rises from P_1 to P_2 and the number of holidays falls from Q_1 to Q_2. The government also gains tax revenue, which could be spent on protecting the environment of host countries, so the tax helps to internalise the negative externality from travel.

However, its effectiveness depends on the price elasticity of demand. The diagram

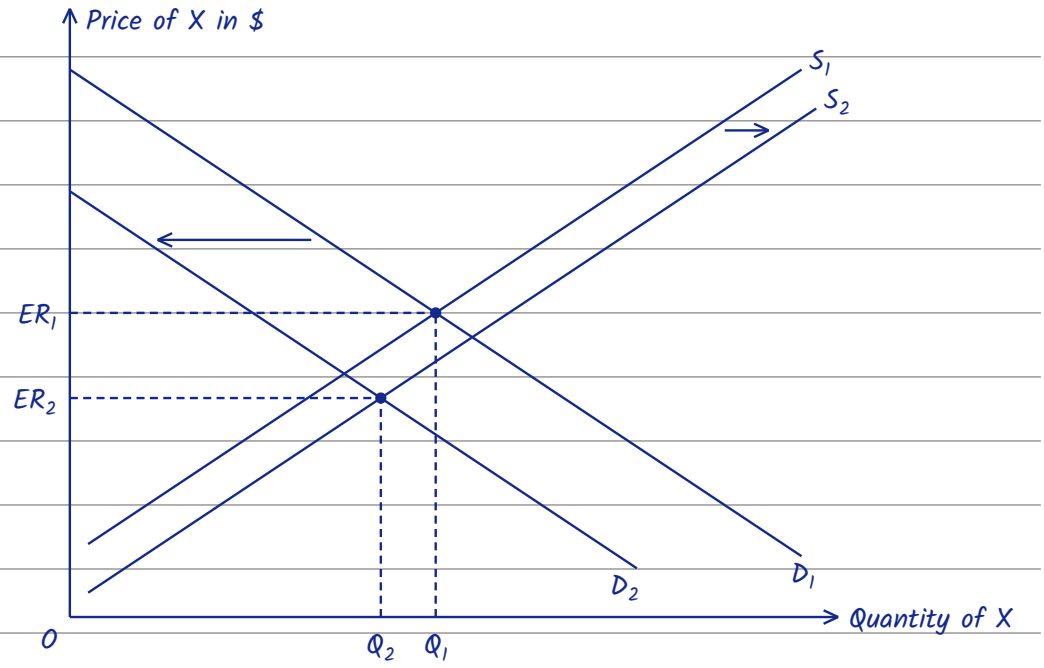
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shows inelastic demand: foreign holidays may be seen as a necessity by many households, and for an annual holiday the tax is a small part of income, so price rises a lot but the quantity falls only a little. Consumers pay most of the tax (P_1P_2) and producers only P_3P_1. Also high-income consumers, who take most foreign holidays, may hardly be affected, while the tax is regressive for poorer families. The size of the tax matters: a small tax will have little effect. Consumers may avoid the tax by booking abroad or travelling from another country, and in the long run rising incomes may shift demand to the right, offsetting the tax. Demand for some holidays, such as short city breaks, may be price elastic because domestic holidays are close substitutes, so here the tax could reduce numbers a lot. Effectiveness also depends on how the revenue is used.

In conclusion, an indirect tax will reduce the number of foreign holidays taken, but because demand is likely to be price inelastic, especially for richer consumers, the reduction is likely to be small unless the tax is large; it may be more effective combined with other policies such as regulation of tourism in sensitive areas.

4(a) A floating exchange rate is the price of one currency in terms of another, set by the demand for and supply of the currency on the foreign exchange market. A depreciation is a fall in this price.

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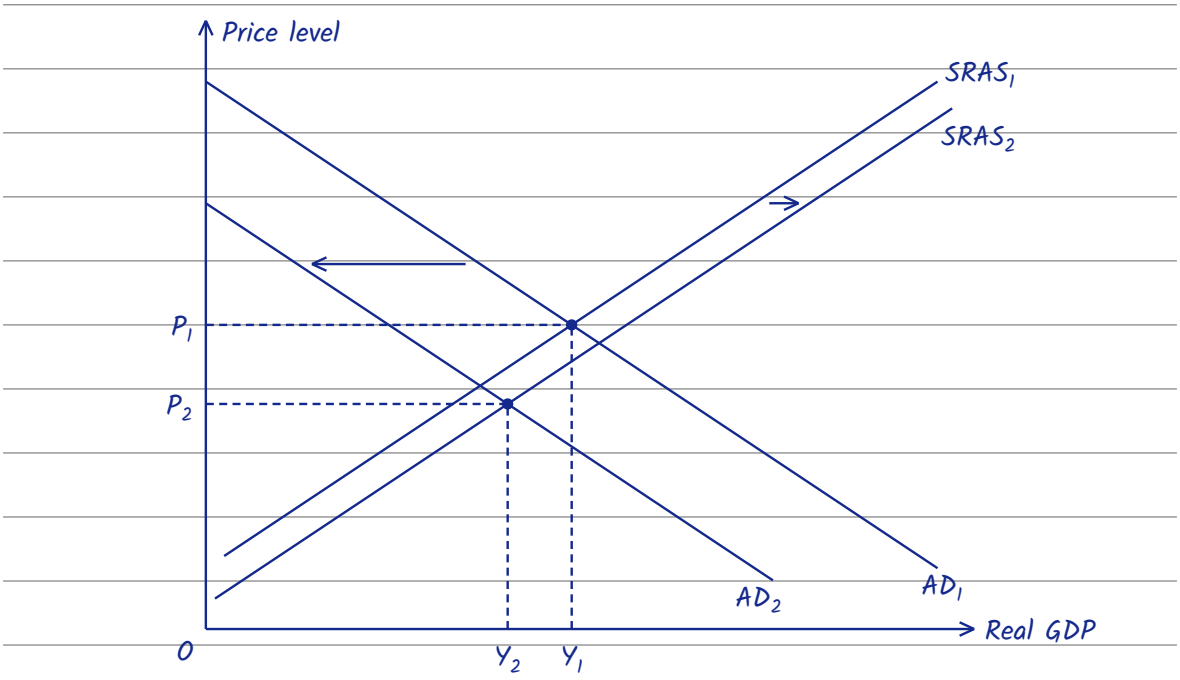
Demand factor: a fall in exports. Foreigners demand country X's currency to buy its exports. If a recession abroad reduces incomes there, or X's goods become less competitive because of higher inflation, fewer exports are bought, so the demand for the currency falls from D_1 to D_2. At ER_1 there is now an excess supply of the currency, so its price falls.

Supply factor: a rise in imports or a capital outflow. Residents supply their currency to buy foreign currency for imports and for investment abroad. If interest rates in X fall relative to other countries, hot money leaves the country, and if incomes in X rise, imports increase; either way the supply of the currency increases from S_1 to S_2.

Both changes lower the equilibrium price of the currency from ER_1 to ER_2, so the currency depreciates.

4(b) An appreciation is a rise in the value of a country's currency in terms of other currencies, so its exports become more expensive abroad and imports become cheaper at home.

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Effect on inflation: an appreciation is likely to reduce inflation rather than raise it. Imports of consumer goods are cheaper, so the price index rises less. Imported raw materials and components are cheaper, so firms' costs fall and SRAS shifts from $SRAS_1$ to $SRAS_2$, reducing cost-push inflation. Net exports (X – M) fall, so AD shifts left from AD_1 to AD_2, reducing demand-pull pressure. The price level falls from P_1 to P_2. Firms facing cheaper foreign competition also have an incentive to keep prices down and to raise efficiency.

Effect on employment: exports become less price competitive and consumers switch to cheaper imports, so domestic output falls (Y_1 to Y_2) through the multiplier and firms need fewer workers, so employment is likely to decrease, especially in export and import-competing industries. However, the effect depends on the price elasticities of demand for exports and imports: if they are inelastic (Marshall-Lerner condition not met), spending on imports and export revenue change little. Cheaper imported inputs may lower costs and protect jobs in industries that use them, and the appreciation may reflect a strong, growing economy, in which case employment may still rise.

Inflation could rise only in unusual cases, for example if the appreciation is caused

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by a boom in demand, which itself raises prices.

In conclusion, an appreciation is unlikely to cause both effects. It is likely to reduce inflation and to reduce employment, though the size of the fall in employment depends on elasticities, the size and duration of the appreciation and the state of the world economy.

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ECONOMICS **9708/22**

Paper 2 Data Response and Essay **May/June 2020**

1 hour 30 minutes

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You must answer on the enclosed answer booklet.

You will need: Answer booklet (enclosed)

INSTRUCTIONS

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INFORMATION

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Section A

Answer this question.

1 Argentina raises interest rates to 40 per cent

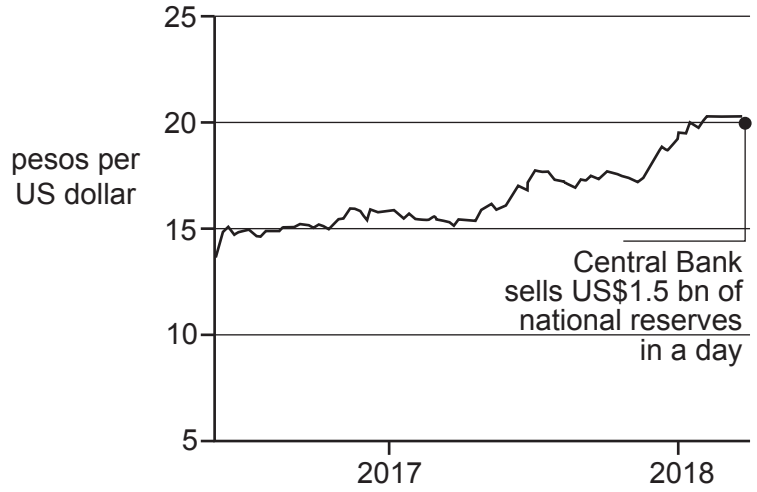


Fig. 1.1: Argentina's exchange rate (pesos per US dollar), May 2016 to May 2018

Source: BBC/Bloomberg

On 4 May 2018, Argentina's central bank raised interest rates to 40%. The day before this increase they were raised from 30.25% to 33.25%. A week earlier, they were raised from 27.25%. The rises were aimed at supporting Argentina's currency, the peso, which lost a quarter of its value over the previous year. Despite these rises, the peso, which before the economic turmoil in Argentina in 2001–2002 was fixed at parity with the US dollar, was trading at about 22 pesos to the US dollar. Risks to the peso had been developing for some time. These included large budget and current account deficits, a heavy government debt burden, persistent high inflation and an overvalued currency.

Inflation, a long-standing problem in Argentina, was 25% in 2017, the highest annual rate in South America except for Venezuela. The central bank has set an annual inflation target of 15% and has stated it will continue to take measures to achieve it.

Argentina's new president is pursuing a pro-market economic reform programme, seeking to reverse the protectionism and high government spending of previous governments. The president has pledged to reduce government spending drastically. The political opposition wants to stop him from removing subsidies on a range of basic household products, including gas and electricity. Removing the subsidies may bring more inflation in the short term but could help bring it down from its current high level to an annual rate of about 5% by 2020.

International and domestic investors still believe the president has a good plan for Argentina's economic recovery, but they are not convinced he has enough political support to achieve it.

Source: BBC News, 4 May 2018

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(a) State what the upward trend shown in Fig. 1.1 means has happened to the value of the peso between 2016 and 2018. [1]

(b) The central bank of Argentina sold US dollars from its foreign exchange reserves to a value of US$1.5 billion on one day in May 2018.

With the help of a supply and demand diagram, explain what effect you would expect this intervention to have on the value of the Argentine peso. [3]

(c) In the extract it is stated that risks to the peso have been developing for some time and that large budget and current account deficits are some of these risks.

(i) Distinguish between a budget deficit and a current account deficit. [2]

The extract also states that persistent high inflation represents a risk to the peso.

(ii) Explain **one** way in which persistent high inflation represents a risk to the peso. [2]

(d) Use aggregate demand and aggregate supply analysis to explain how the recent interest rate rises might help Argentina to reduce its annual rate of inflation and achieve its target. [6]

(e) Discuss whether the potential advantages outweigh the disadvantages to the Argentine economy if the president is successful in reversing protectionism. [6]

Section B

Answer **one** question.

2 **(a)** Use a production possibility curve diagram(s) to distinguish between the growth of an economy and a reduction in the number of unused resources in an economy and explain **one** reason that might cause each to occur. [8]

(b) Discuss whether the transition of an economy from one that is centrally planned to one in which resources are allocated through the free market is likely to be of overall benefit to the citizens of that economy. [12]

3 In summer 2018, many countries suffered a water shortage because of a long spell of very dry weather.

(a) Explain whether you would expect the price elasticity of supply of water to be relatively elastic or relatively inelastic. [8]

(b) Consider the short-term and long-term policies that could be adopted to deal with a water shortage in an economy and discuss whether these are likely to be successful. [12]

4 **(a)** Explain, using examples, the difference between private goods and public goods and why public goods will not be supplied by private enterprise. [8]

(b) Consider the problem of the provision of merit goods in a market economy and assess whether direct provision of such goods is the most effective way to deal with this problem. [12]

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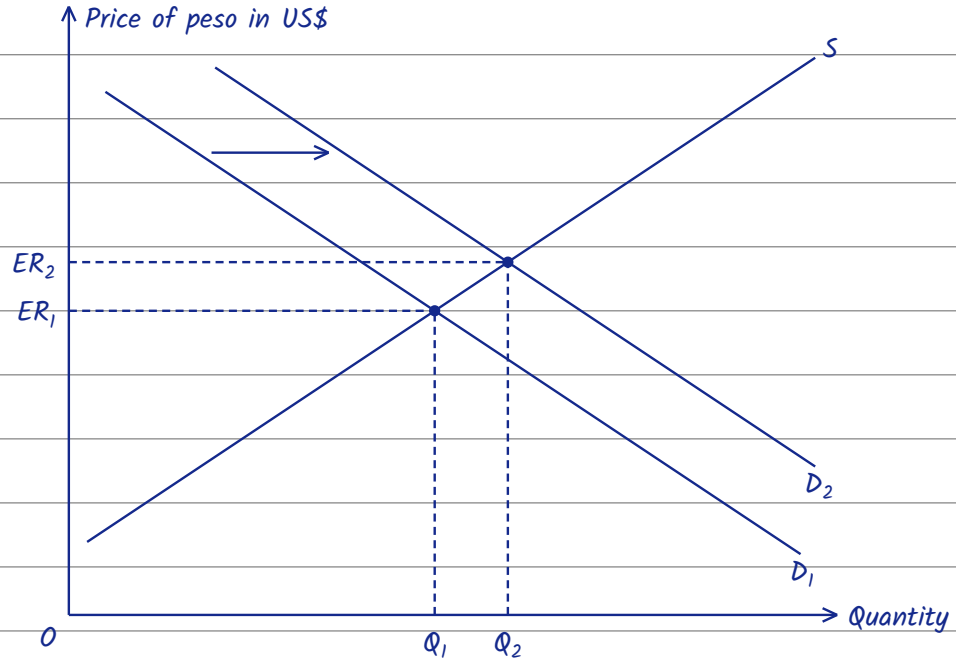
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Answer booklet	Write the question number in the left-hand margin at the start of each answer.

Question number

Answers for paper 9708/22

1(a) More pesos are needed to buy one US dollar, so the peso has depreciated (fallen in value).

1(b)



The central bank sells US$1.5 billion of reserves and buys pesos with them. This increases the demand for pesos on the foreign exchange market from D_1 to D_2, so the price of the peso rises from ER_1 to ER_2. The intervention should raise the value of the peso (or at least slow its fall).

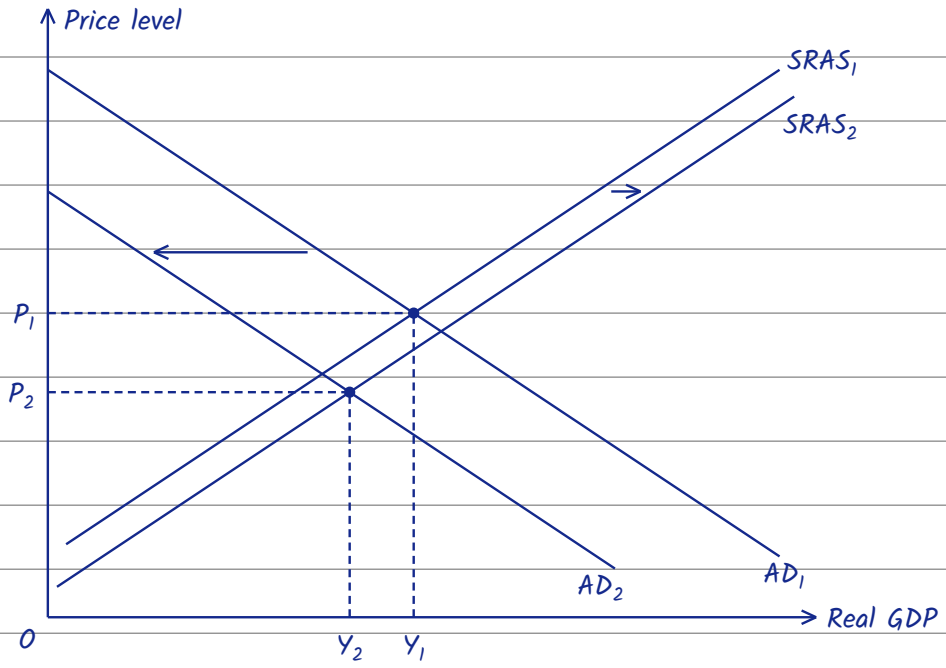
1(c)(i) A budget deficit is when government expenditure is greater than government revenue (mainly taxation) in a year. A current account deficit is when the value of a country's exports of goods and services (and other current inflows such as income and transfers) is less than the value of imports and other current

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outflows. The first is about the government's finances; the second is about trade with the rest of the world.

1(c)(ii) Inflation of 25% makes Argentine goods and services more expensive and less competitive in international markets, so exports fall and imports rise. Foreigners demand fewer pesos and Argentines supply more pesos to buy imports, so there is an excess supply of pesos, putting downward pressure on its value.

1(d)



Higher interest rates (from 27.25% up to 40%) raise the cost of borrowing and the reward for saving. Consumers borrow less for cars and houses and save more, and firms invest less, so consumption and investment fall. Mortgage payments rise, reducing disposable income. Aggregate demand shifts from AD_1 to AD_2, reducing demand-pull inflation, and the price level is lower (P_2 instead of P_1), so the rate of inflation falls from 25% towards the 15% target.

Higher interest rates also attract hot money, so the peso appreciates. Imported raw materials and goods become cheaper, so firms' costs fall and SRAS shifts right ($SRAS_1$ to $SRAS_2$), reducing cost-push inflation. Lower expected inflation may also

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reduce wage claims.

However, higher interest rates raise firms' borrowing costs, which could shift SRAS to the left and add to inflation, and the falls in AD also reduce real GDP (Y_1 to Y_2) and jobs. Removing subsidies will also push prices up, so the target may be difficult to reach.

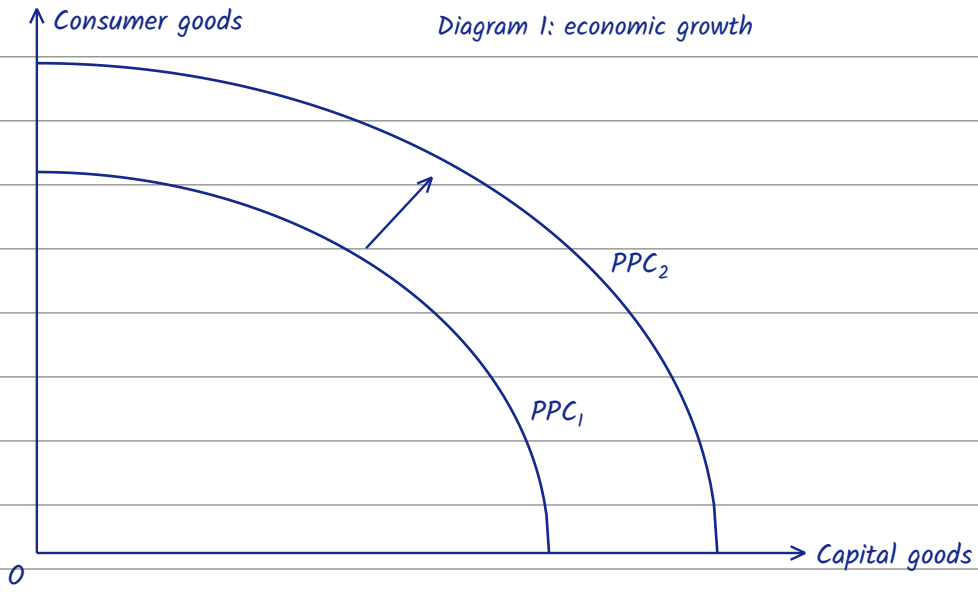
1(e) Reversing protectionism, for example removing tariffs and quotas, has advantages. Consumers can buy cheaper imports with more choice, raising real incomes and reducing inflation, which is high at 25%. Domestic firms face more competition, so they must become more efficient and innovative, and resources move to industries where Argentina has a comparative advantage, such as agriculture, raising output. Exporters gain cheaper inputs, and other countries may reduce their barriers too.

There are also disadvantages. Protected industries may close, causing structural unemployment, at least in the short run. Imports rise, which may worsen the current account deficit and put further downward pressure on the peso. Infant industries may not survive, and tariff revenue is lost when the government is trying to reduce a large budget deficit. There is also political opposition, which may stop the reforms.

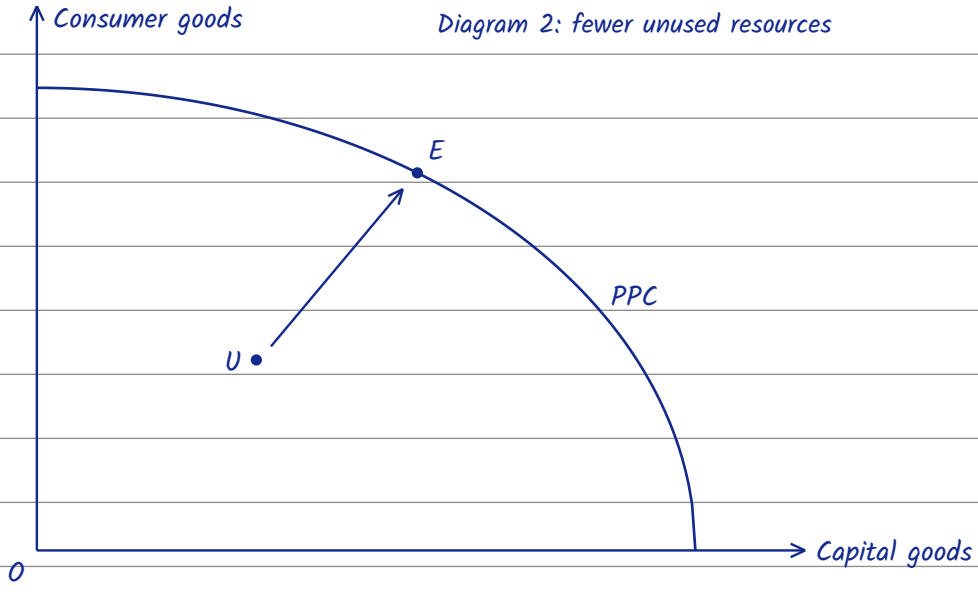
In conclusion, the advantages are likely to outweigh the disadvantages in the long run, through greater efficiency and lower prices, but the short-run costs of unemployment and a weaker current account could be significant, so the reforms may need to be introduced gradually with support for workers.

2(a) A production possibility curve (PPC) shows the maximum combinations of two goods an economy can produce when all its resources are fully and efficiently employed, with a given state of technology.

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Economic growth is an increase in the productive capacity of the economy, shown by an outward shift of the whole PPC from PPC_1 to PPC_2 in Diagram 1, so more of both goods can now be produced. One cause is investment in capital goods, or an improvement in technology: new machinery raises the productivity of labour, so the same resources can produce more output. Other causes include an increase in the labour force through immigration, or better education and training.



A reduction in unused resources means that resources that were unemployed or used inefficiently are brought into use. The economy moves from a point inside the

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PPC, U, to a point on (or nearer to) it, E, in Diagram 2, while the PPC itself does not move. One cause is an increase in aggregate demand, for example a cut in interest rates or higher government spending in a recession: firms sell more, so they employ unemployed workers and idle machines.

So growth increases what the economy is able to produce, while reducing unused resources only increases what it actually produces up to its existing potential.

2(b) In a centrally planned economy the state owns most resources and a planning authority decides what to produce, how to produce it and for whom, setting output targets and prices. This can give a more equal distribution of income, provision of basic goods for everyone and low unemployment. However, planners cannot have enough information about millions of consumers' wants, so there are shortages of some goods (queues) and surpluses of others. There is no profit motive, so incentives to work hard, cut costs and innovate are weak, leading to inefficiency, poor quality and slow growth, and little consumer choice.

In a free market economy resources are allocated by the price mechanism. Prices act as signals and incentives: if demand for a good rises, its price rises, profits rise and resources move into producing it, while a fall in demand moves resources out. This tends to give allocative and productive efficiency, more choice and innovation, so the transition could raise living standards in the long run. However, the free market has failures: public goods are not provided, merit goods are under-consumed, demerit goods and negative externalities are over-produced, monopoly power can develop and income and wealth become more unequal.

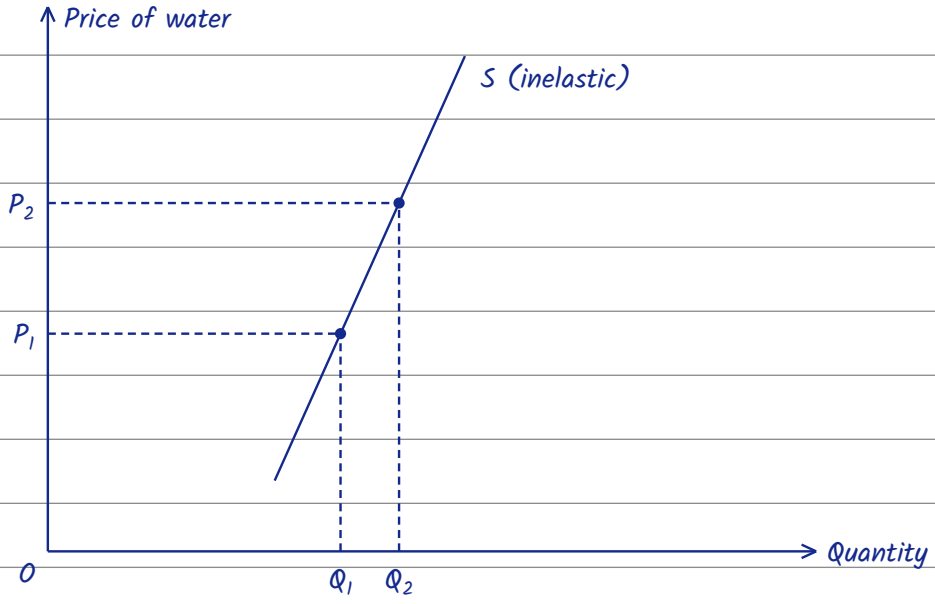
Whether the transition benefits citizens overall depends on several factors. In the short run there may be high unemployment as inefficient state firms close, inflation as price controls are removed, and loss of state benefits, so many citizens may be worse off, as happened in some transition economies in the 1990s. It also depends on how quickly the change is made, on whether laws, property rights and

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competition policy are in place to stop monopolies and corruption, and on which citizens we consider: entrepreneurs and skilled workers may gain, while the old and the poor may lose.

In conclusion, a move towards the free market is likely to benefit citizens overall in the long run through higher efficiency, growth and choice, but only if the government keeps a role in correcting market failures and protecting the poor, so in practice the best outcome is a mixed economy rather than a completely free market.

3(a) Price elasticity of supply (PES) measures the responsiveness of the quantity supplied of a good to a change in its price. PES = % change in quantity supplied ÷ % change in price. Supply is relatively inelastic if PES is between 0 and 1, and relatively elastic if PES > 1.



Water is likely to be relatively price inelastic in supply, especially in the short run. The supply of water depends on rainfall and on the capacity of reservoirs, pipes and treatment plants, which cannot be increased quickly. In a water shortage, caused by a long spell of dry weather, there are no stocks to release, and building new reservoirs or desalination plants takes years and is very expensive. So a large

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rise in price from P_1 to P_2 causes only a small rise in quantity supplied from Q_1 to Q_2, as on the steep supply curve.

However, supply could be more elastic in some situations. In the long run, firms can invest in new capacity, so PES rises. If there is spare capacity in reservoirs, or water can be transferred from other regions or imported, or bottled water is stored, suppliers can respond more to a price rise. Leaks can also be repaired fairly quickly.

Overall, because water cannot easily be stored or produced quickly, especially during a shortage, supply is likely to be relatively inelastic, though it becomes more elastic over time.

3(b)

A water shortage occurs when the quantity demanded exceeds the quantity supplied at the current price. Policies can either reduce demand or increase supply.

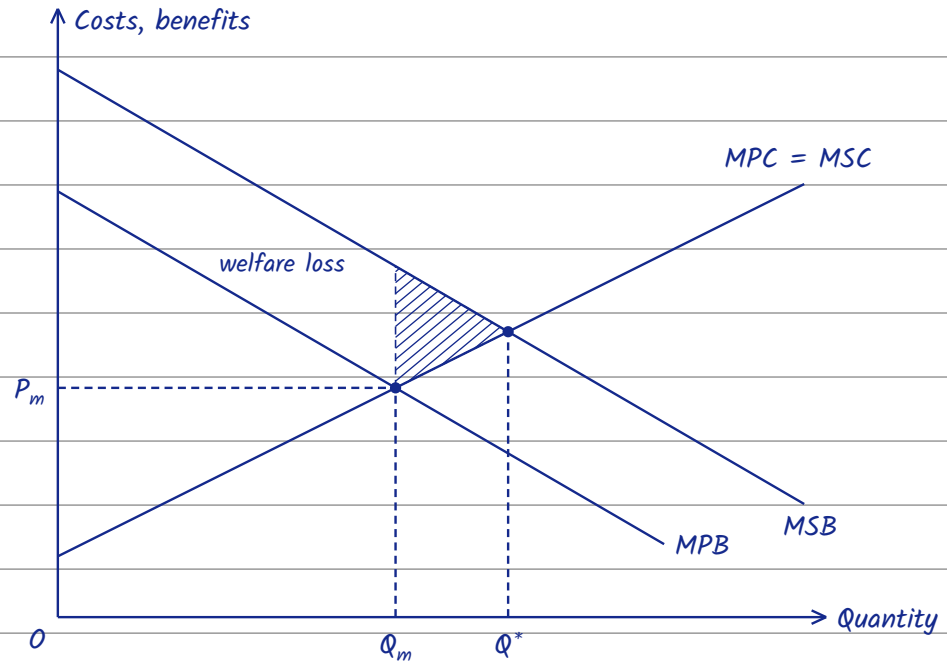
Short-term policies: the government can ration water, for example hosepipe bans or limits on supply at certain hours, which reduce use quickly. It could allow the price to rise, or meter water so that users pay for each unit, which gives an incentive to use less, and it can run information campaigns to persuade people to save water. These can work quickly, but demand for water is price inelastic because it is a necessity with no substitutes, so price rises reduce use only a little and are regressive, hitting poor households hardest. Rationing is hard to enforce and may create a black market, and campaigns depend on people's response.

Long-term policies: the government could increase supply by building reservoirs, desalination plants and pipelines between regions, and by repairing leaking pipes. It could subsidise water-saving technology, such as efficient irrigation in agriculture, or regulate firms to recycle water. These can solve the problem permanently because they shift supply to the right or reduce demand. However, they are very expensive, have a high opportunity cost for government spending and take years to complete; desalination also uses a lot of energy and has environmental costs.

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	Government failure is possible if projects are badly planned. The success of any policy depends on the cause and length of the shortage, on whether it is a temporary drought or a permanent problem caused by climate change and rising population, and on whether the country can afford the cost. In conclusion, short-term measures such as rationing and campaigns are likely to be successful only in reducing use for a short dry spell, while a lasting solution requires long-term investment to increase supply and improve efficiency. A combination of both is most likely to succeed.
4(a)	A private good is excludable, as people who do not pay can be prevented from consuming it, and rival, as one person's consumption reduces the amount available for others, for example a sandwich or a car. A public good is non-excludable and non-rival, for example street lighting, national defence or a lighthouse: once a street light is on, no-one can be prevented from benefiting, and one more person using the light does not reduce the light for anyone else (the marginal cost of an extra user is zero). Public goods will not be supplied by private enterprise because of these characteristics. Because the good is non-excludable, a private firm cannot stop people who refuse to pay from consuming it, so it cannot charge a price and make a profit. Because it is non-rival, consumers know the good will be available to them anyway. This creates the free rider problem: each person has an incentive not to reveal their true demand and to wait for others to pay, while still benefiting. So there is no effective market demand, and a profit-seeking firm will not produce the good at all, even though it has large social benefits. This is a complete market failure (a missing market), so public goods must be provided by the government and paid for out of taxation.
4(b)	A merit good, such as education, health care or vaccinations, is a good that is

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under-consumed in a free market because of information failure: consumers underestimate its private benefits, for example the higher future earnings from education, and they ignore the positive externalities it creates for third parties, such as a more productive workforce. So MSB is above MPB.



The free market produces where MPB = MPC, at Q_m, but the socially optimal output is where MSB = MSC, at Q^*. So the good is under-produced and under-consumed, and there is a welfare loss shown by the shaded triangle. The poor may also be unable to afford it, which is inequitable.

Direct provision means the government produces the good itself and provides it free or at a low price, such as state schools and hospitals. This can raise consumption to Q^* or beyond and guarantees that everyone, including the poor, has access. However, it is expensive and must be financed by taxes, there is a risk of over-provision, and state producers may be inefficient because they lack the profit motive and competition. Free provision may also lead to excess demand and waiting lists.

Alternatives include a subsidy to private producers, which shifts supply to the right, lowering the price and raising output towards Q^*, while keeping competition.

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But the government needs to know the size of the external benefit to set the right subsidy, and if demand is inelastic it may raise output only a little.

Information campaigns tackle the cause of the problem, information failure, at low cost, but they work slowly and may be ignored. Regulation, such as compulsory schooling, can also increase consumption.

In conclusion, direct provision is most effective for merit goods with very large external benefits and where equity matters most, such as basic education and vaccinations. For other merit goods a subsidy or information may achieve the same result at lower cost, so in practice a combination of policies is likely to be most effective.

Cambridge Assessment International Education

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ECONOMICS **9708/23**

Paper 2 Data Response and Essay **May/June 2020**

1 hour 30 minutes

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You must answer on the enclosed answer booklet.

You will need: Answer booklet (enclosed)

INSTRUCTIONS

- Answer **two** questions in total:
  - Section A: answer Question 1.
  - Section B: 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 40.
- The number of marks for each question or part question is shown in brackets [ ].

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Section A

Answer this question.

1 The growing problem of plastic waste

It has been estimated that, globally, consumers buy a staggering one million plastic bottles every minute and that 91% of these are not recycled. There is now real and growing concern about the serious threat to marine life caused by the dumping of plastic waste in the sea.

There are an estimated 150 million tonnes of plastic waste in the world's oceans. Every year, millions of birds, mammals and fish die from eating or getting tangled in plastic waste. There is also growing evidence that humans could become ill when consuming fish that has eaten plastic waste. A recent study found that people who often consume seafood eat up to 11 000 tiny pieces of plastic each year. Those living in parts of South East Asia and around the Mediterranean sea are most at risk.

The scale of these problems is worst in Asia's developing economies. For example, a recent report from Pakistan stated that 'Continued dumping of plastic products has become a serious threat to animals and plants inhabiting coastal and offshore waters. People do not seem to understand how damaging plastic waste is for the oceans.' This is a typical concern; significantly, no solutions to these problems have been proposed by Pakistan's government.

One possible way to tackle the problem is to introduce a 'bottle tax' on drinks that are sold in plastic bottles. The amount of tax would ideally depend on the size of the bottle, for example being $0.10 for a one litre bottle and $0.20 for a two litre bottle.

The UK government is considering imposing a 'deposit return' scheme similar to those that are successfully operating in Denmark, Germany and Sweden. Customers would pay a deposit when buying drinks in plastic bottles and are refunded the deposit if they return the empty plastic bottles to a retailer.

In most developed countries the legal disposal of plastic waste is heavily regulated. The most common method of disposal is for plastic waste to be buried in landfill sites. Interestingly, in China and India, landfill sites often have very few plastic bottles because people collect bottles and sell them to gain a source of income.

Another solution to the problem of plastic waste is to create a new product by recycling the plastic; more research needs to be carried out to evaluate this option, but this research is expensive and beyond the reach of many developing economies.

The demand for plastic products is forecast to increase due to its widespread use in agriculture, manufacturing and retailing. Unless something is done about the problems of disposal, even more plastic rubbish will find its way into our oceans. The key issue for many of Asia's developing economies is that their options appear to be limited.

Sources: Dawn, 24 June 2017 and *Punjab Daily Times, 1 November 2017*

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(a) Explain why a plastic bottle can be classified as both a private good and a demerit good. [4]

(b) **(i)** Distinguish between an *ad valorem* tax and a specific tax. [2]

(ii) Explain whether the 'bottle tax' referred to in the extract is an ad valorem tax or a specific tax. [2]

(c) **(i)** With the help of a diagram, analyse the impact of the 'bottle tax' on the price and sales of plastic bottles. [2]

(ii) With the help of a diagram(s), explain what would determine the incidence of the 'bottle tax' on the consumers of plastic bottles. [4]

(d) Discuss whether taxing plastic bottles is the most effective way of reducing plastic waste in developing economies. [6]

Section B

Answer **one** question.

2 **(a)** The price elasticity of supply for a new smartphone is estimated at 0.8 in the short run and 1.5 in the long run.

Explain price elasticity of supply and suggest why the above estimates differ. [8]

(b) Discuss whether, for a manufacturer of smartphones, knowledge of their product's price elasticity of demand or its cross elasticity of demand with respect to other products is more useful. [12]

3 The annual rate of inflation in an economy increased sharply and unexpectedly.

(a) Explain the likely consequences of such an increase for consumers and firms. [8]

(b) Discuss whether a substantial rise in interest rates is the best way of correcting this increased rate of inflation. [12]

4 **(a)** Explain why the theory of comparative advantage may **not** give a true account of the benefits of free trade. [8]

(b) In April 2018, the United States (US) government threatened to impose tariffs of 25% on a wide range of imports from China including steel, technological products, medicines and household goods such as washing machines. In turn, China threatened to retaliate with the same proposed tariff on imports from the US of soya beans, cars and chemicals.

Discuss whether the US and China could both benefit from the imposition of tariffs on goods such as those identified. [12]

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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

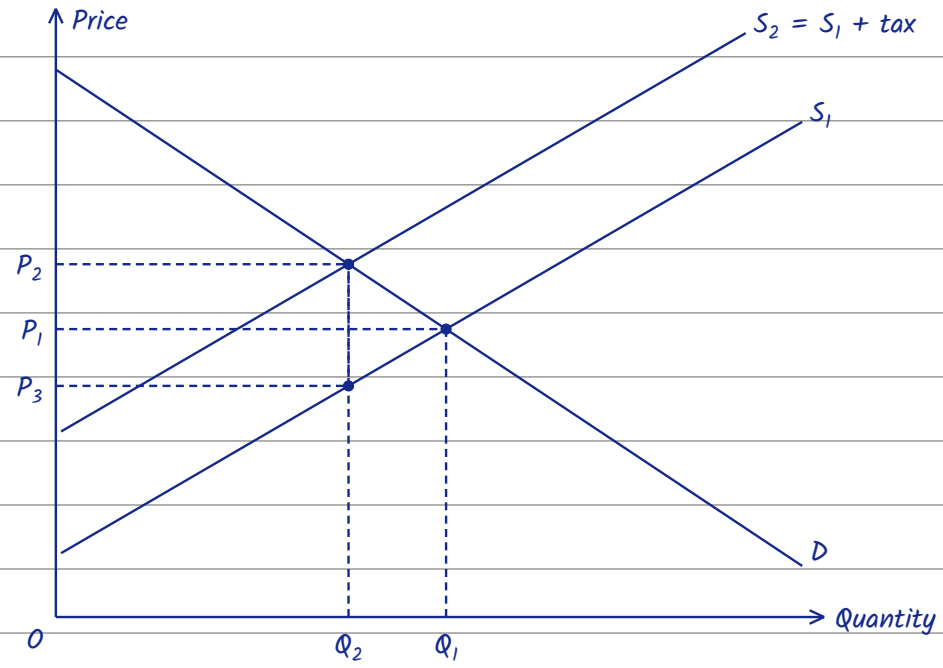
1(a) A plastic bottle is a private good because it is excludable (a consumer who does not pay can be prevented from having it) and rival (once one person buys and uses a bottle, it is not available to anyone else).
It is also a demerit good because it is over-consumed in a free market: consumers do not realise, or ignore, the harm caused by plastic waste, such as damage to marine life and the risk to health from eating fish that have eaten plastic. This is information failure, so consumption is above the socially optimal level.

1(b)(i) An ad valorem tax is a percentage of the price of the good, for example VAT or GST, so the tax per unit rises as the price rises. A specific tax is a fixed amount of money per unit of the good, for example per litre of fuel, whatever its price.

1(b)(ii) It is a specific tax, because a fixed amount is charged per bottle ($0.10 for a one litre bottle) not a percentage of the price. But the tax varies with the size of the bottle ($0.20 for two litres), so it has an element of an ad valorem tax.

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1(c)(i)



The tax raises the costs of selling drinks in plastic bottles, so supply shifts to the left from S_1 to S_2 by the amount of the tax. The price rises from P_1 to P_2 and the quantity sold falls from Q_1 to Q_2.

1(c)(ii) The incidence of the tax on consumers is the share of the tax paid by consumers through a higher price (P_1 to P_2, the shaded area). It is determined by the price elasticities of demand and supply.

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Diagram 1: inelastic demand

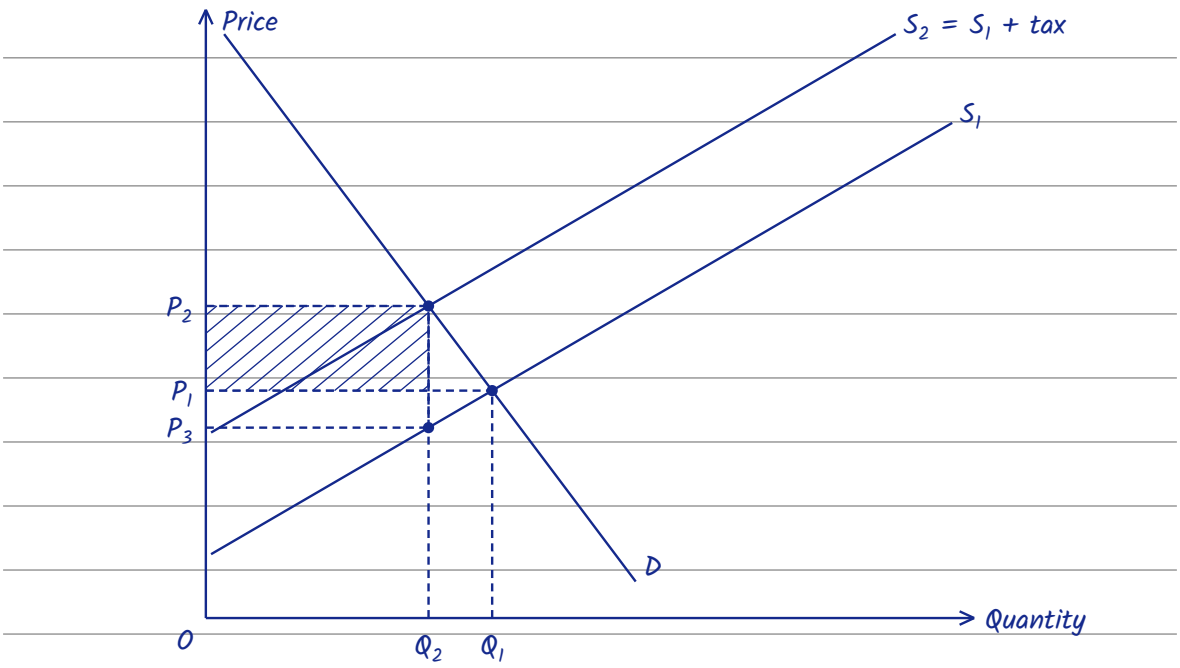
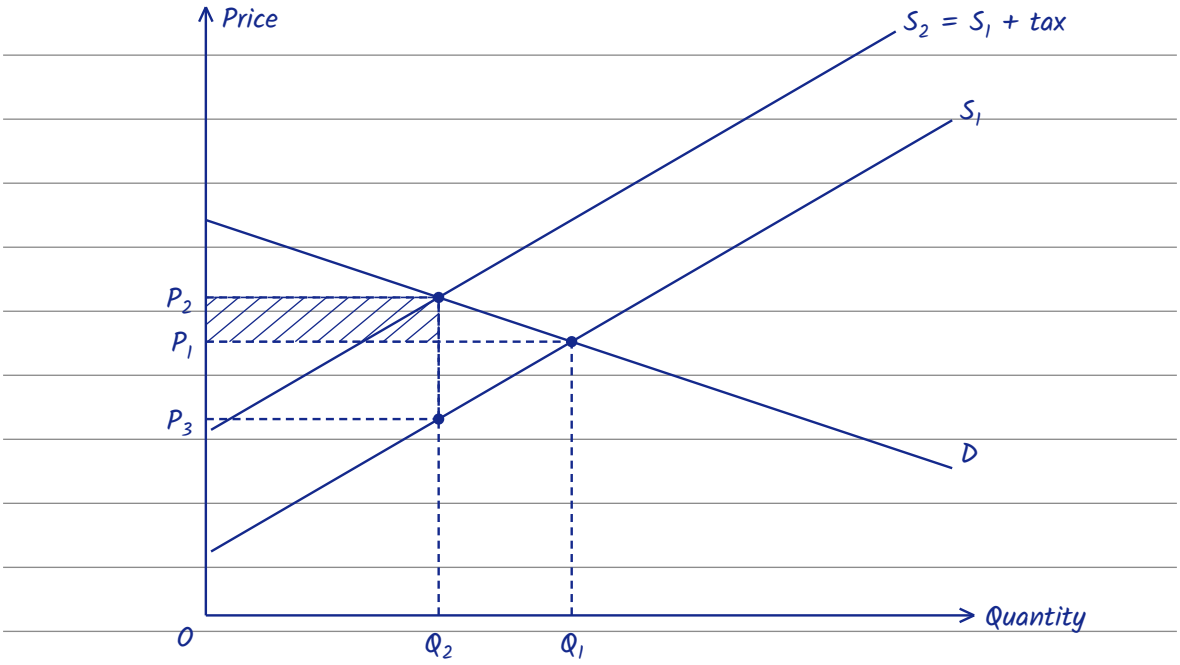


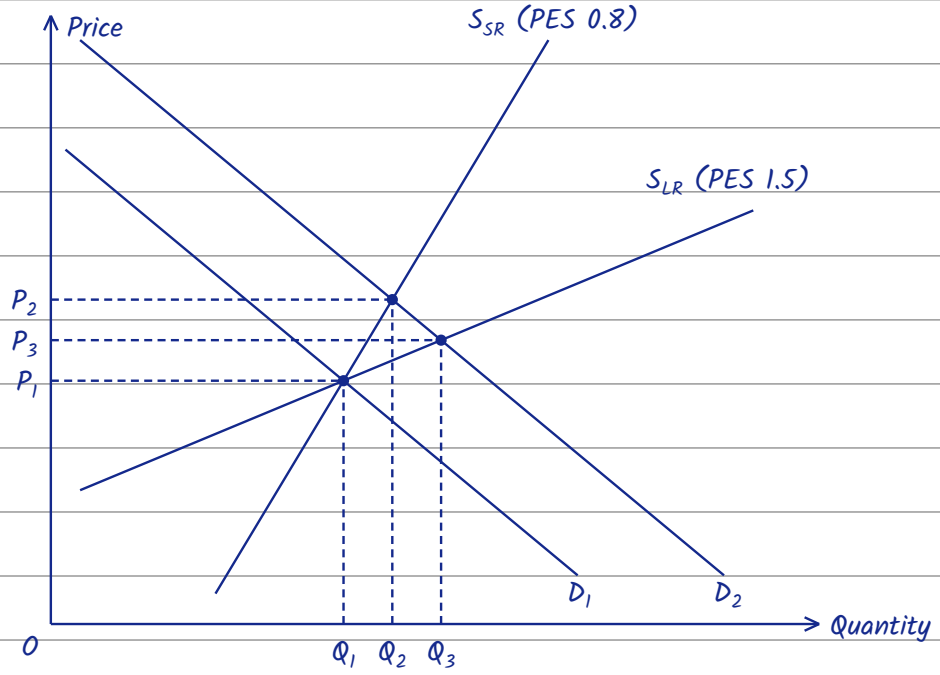
Diagram 2: elastic demand



In Diagram 1 demand is price inelastic, for example if consumers have few alternatives to bottled drinks, so the price rises by most of the tax and consumers pay the larger share. In Diagram 2 demand is price elastic, so the price rises only a little and producers pay most of the tax (P_3P_1). Similarly, the more elastic the

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	supply compared with demand, the greater the share of the tax that falls on consumers; if supply is inelastic, producers bear most of it.
1(d)	A bottle tax raises the price of drinks in plastic bottles, so fewer are bought and less plastic waste is produced, and the revenue could fund waste collection or clean-up. It makes the polluter pay and internalises the external cost. However, demand for drinks may be price inelastic, so sales fall only a little, and the tax is regressive, hitting the poor hardest. In developing economies such as Pakistan, enforcement and collection are difficult and there may be a large informal sector, so the tax may be avoided. Other methods could be more effective. A deposit return scheme, as in Denmark, Germany and Sweden, gives consumers a direct incentive to return bottles, so they are recycled rather than dumped. In China and India people already collect bottles to sell, showing that a financial reward works well where incomes are low. Regulation or bans on dumping, and education campaigns to reduce information failure, are other options, though recycling research is expensive and beyond the reach of many developing economies. In conclusion, the tax is unlikely to be the most effective way on its own in developing economies; a deposit scheme that rewards collection, together with education, is likely to reduce waste more, with the tax as a supporting measure.
2(a)	Price elasticity of supply (PES) measures the responsiveness of quantity supplied to a change in the price of the good. PES = % change in quantity supplied ÷ % change in price. A PES of 0.8 means supply is price inelastic: a 10% rise in price increases quantity supplied by only 8%. A PES of 1.5 means supply is price elastic: a 10% rise in price increases quantity supplied by 15%.

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The estimates differ because of the time period. In the short run at least one factor of production, such as the factory and the production lines, is fixed. The manufacturer can only increase output by using more labour and overtime with existing capital, and specialised components such as chips and screens may be in short supply, so supply is inelastic (0.8). When demand increases from D_1 to D_2, the price rises a lot, to P_2, and output rises only to Q_2.

In the long run all factors are variable: the firm can build new factories, install new machinery, train workers and find more suppliers of components, and new firms may enter the market attracted by high profits. So output can respond much more to a price rise and supply becomes elastic (1.5), with output rising to Q_3 and the price only to P_3. Other factors are that, as the new phone becomes established, the firm may build up stocks and gain spare capacity, which also make supply more elastic.

2(b)

Price elasticity of demand (PED) measures the responsiveness of quantity demanded to a change in the price of the good: PED = % change in quantity demanded ÷ % change in price. Cross elasticity of demand (XED) measures the

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responsiveness of the quantity demanded of one good to a change in the price of another good: XED = % change in quantity demanded of good A ÷ % change in price of good B.

PED is very useful for pricing decisions. If demand for its smartphone is price inelastic (PED < 1), for example for a strong brand with loyal customers, a rise in price increases total revenue because quantity falls by a smaller percentage. If demand is elastic, the firm should cut prices to raise revenue and market share. PED also helps the firm predict how many phones to produce at each price and how much of a cost increase or tax it can pass on.

XED is useful because smartphones have many close substitutes and complements. A high positive XED with a rival's phone shows strong competition, so if the rival cuts its price the firm will lose many sales and may need to respond, or spend on advertising and new features to make its phone less substitutable. A negative XED with complements such as apps, cases or network contracts shows that the firm could sell more phones if these became cheaper, so it may bundle them or keep their prices low.

Which is more useful depends on the market. In a highly competitive smartphone market, where rivals frequently launch new models and change prices, knowledge of XED may be more important for strategy. But the firm can only control its own price, so PED is more directly useful for its everyday pricing. Both estimates have limits: they are based on past data, change over time as tastes and incomes change, assume other things stay equal and are expensive to measure accurately.

In conclusion, PED is likely to be more useful for a smartphone manufacturer because it directly guides its pricing and revenue decisions, but XED is a valuable complement in a competitive market, so ideally the firm should use both together.

3(a) Inflation is a sustained increase in the general price level over a period, measured by a consumer price index. Because the increase was unexpected, consumers and

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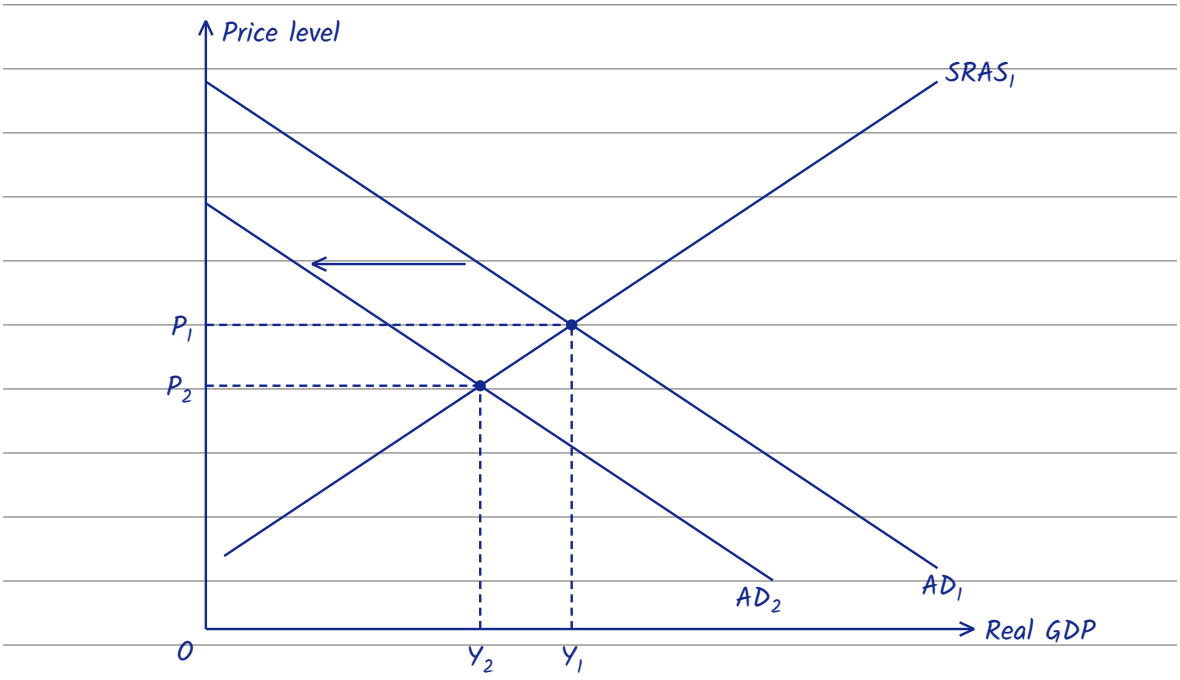
firms have not been able to plan for it, so its costs are larger.

Consumers: if money wages do not rise as fast as prices, real incomes fall, so people can buy fewer goods; those on fixed incomes, such as pensioners, are hit hardest. Savers lose because the real value of savings falls, especially if the real interest rate becomes negative, whereas borrowers gain because the real value of their debts falls. As the rise was unexpected, wage and loan contracts did not allow for it, so income is redistributed in an unplanned way. Consumers also find it harder to compare prices and may have to search more (shoe leather costs).

Firms: they face higher costs of raw materials and wage claims, and have to change price lists (menu costs). Uncertainty about future prices makes planning harder, so firms may postpone investment, reducing future growth. If domestic inflation is higher than in other countries, exports become less price competitive and imports more attractive, so sales and profits may fall. Firms with large debts gain from the fall in the real value of debt, and some firms may increase profits if their prices rise faster than their costs.

3(b) A substantial rise in interest rates is contractionary monetary policy. It raises the cost of borrowing and the reward for saving.

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Higher interest rates reduce consumption, because borrowing for cars and houses is more expensive and mortgage payments rise, and reduce investment, because fewer projects are profitable. Hot money flows in, so the currency appreciates, making imports cheaper and reducing net exports. AD shifts left from AD_1 to AD_2, so the price level is P_2 instead of P_1, reducing demand-pull inflation. An appreciation also lowers import costs and helps reduce cost-push inflation. It can be introduced quickly by an independent central bank.

However, there are disadvantages. Real GDP falls from Y_1 to Y_2, so unemployment rises and the economy may go into recession. A substantial rise may be too strong; there are time lags of up to two years, so it may affect the economy after inflation has already fallen. Higher rates raise firms' costs and reduce investment, reducing future capacity, and the appreciation harms exporters. If the inflation is cost-push, for example from higher oil prices, higher interest rates do not deal with the cause.

Other policies could be used. Contractionary fiscal policy, higher taxes or lower government spending, also reduces AD, and can be targeted, but it is politically unpopular and has long time lags. Supply-side policies, such as training and

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deregulation, raise productivity and shift LRAS to the right, reducing inflation without lower output, but they work only in the long run. Wage and price controls may work quickly but cause shortages.

In conclusion, a substantial rise in interest rates is likely to be the best short-run tool if the sharp rise in inflation is demand-pull, because it acts quickly and also affects expectations. If the inflation is cost-push, a smaller rise combined with supply-side policies would be better, to avoid a large fall in output and employment.

4(a) A country has a comparative advantage in a good when it can produce it at a lower opportunity cost than another country, because of differing resources. The theory says that if each country specialises in the good in which it has a comparative advantage and trades, total world output rises and both countries can gain.

However, the theory may not give a true account of the benefits because it rests on assumptions. First, it assumes constant costs and no transport costs. In reality, as a country specialises, opportunity costs may rise (diminishing returns), and transport costs and tariffs may outweigh the cost differences, so the gains are smaller than predicted.

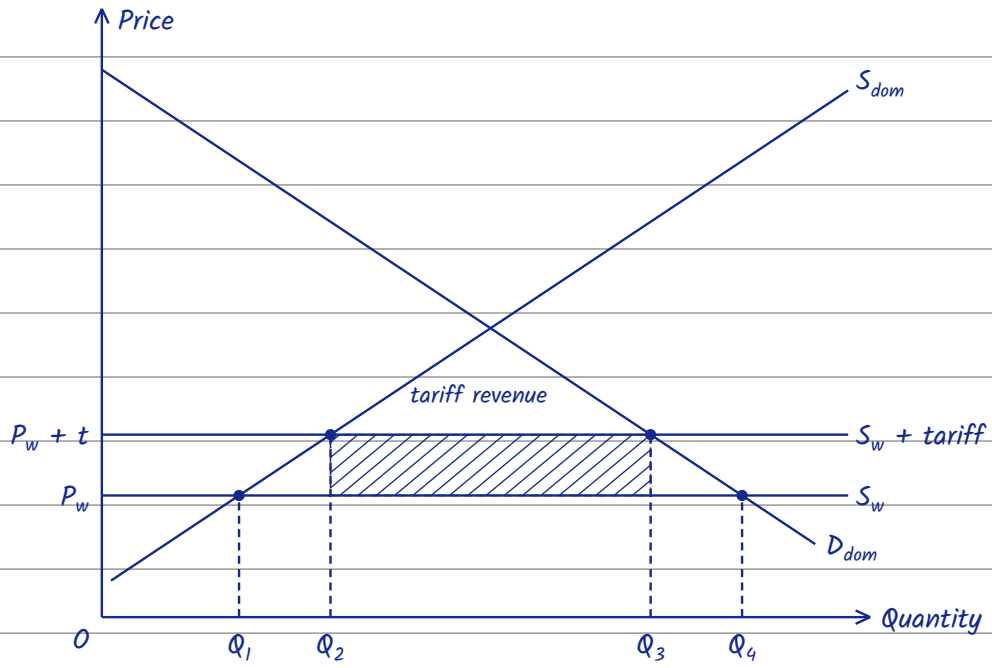
Second, it assumes perfect mobility of factors of production between industries. In reality workers may lack the right skills or be unable to move, so when an industry declines because of imports there is structural unemployment and resources are wasted, which reduces the benefits.

Third, the theory says nothing about how the gains are shared. The terms of trade decide this, and a country exporting primary products with falling prices may gain little. It also ignores the risks of over-specialisation, such as dependence on one export, and external costs such as pollution from extra production and transport. So the actual benefits of free trade may be smaller and less evenly distributed than

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the theory suggests.

4(b) A tariff is a tax on imported goods. It raises the domestic price of imports, from P_w to $P_w + t$.



Each country could benefit. In the US, domestic steel producers can sell at a higher price, so domestic output rises from Q_1 to Q_2, protecting jobs in steel and in making washing machines, and imports fall from Q_1Q_4 to Q_2Q_3. The government gains tariff revenue (shaded area). The US could also use tariffs to correct what it sees as unfair competition, such as dumping, and to reduce its trade deficit with China. China would similarly protect its farmers, car makers and chemical firms, and gain revenue, and may use the threat to negotiate better terms.

However, both countries are likely to lose. Domestic consumers pay higher prices and consume less (Q_4 falls to Q_3), so consumer surplus falls by more than the gains to producers and the government, leaving deadweight losses from inefficient production and lost consumption. US firms that use Chinese steel, technological products and components face higher costs, so they become less competitive and may cut jobs. Because China retaliates, US exporters of soya beans and cars lose

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sales, and Chinese exporters lose sales to the US, so employment in export industries falls in both countries. Resources are moved away from comparative advantage, and world trade and growth fall.

The overall effect depends on the elasticities of demand for the goods, on whether substitutes can be found from other countries, on how long the tariffs last and on whether they are only threats used to negotiate.

In conclusion, in a trade war in which both countries impose tariffs, it is unlikely that both will benefit. Some producers in each country gain, but consumers and exporters lose more, so both economies are likely to be worse off overall, unless the threat leads to an agreement that reduces barriers.