Cambridge Assessment International Education

Cambridge International AS & A Level

ECONOMICS **9708/22**

Paper 2 AS Level Data Response and Essays **February/March 2024**

2 hours

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.

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Section A

Answer all parts of Question 1.

1 **Artificial Intelligence**

Artificial Intelligence (AI) is a form of technological progress. It involves computers or computer-controlled robots engaging in tasks usually performed by humans. Many businesses invest in AI to reduce their costs, to increase their efficiency by reducing human errors and to raise business revenues and profits.

The COVID-19 pandemic has accelerated this process – from increased use of contactless card payment systems to large-scale investment in driverless taxis. In China, a leading internet search company plans to follow some of its rivals in the United States (US) by starting a driverless taxi service in 100 cities by 2030.

Nevertheless, the pace of growth in AI has raised concerns that this will result in increased unemployment. One study suggests that up to 38% of US jobs are at risk from automation by the mid-2030s. To date, Japan has between 200 and 300 AI companies. It is also the leading supplier of industrial robots and third, behind China and the US, in spending on research and development into AI.

Just a few years ago, the growth of the internet created similar fears. Despite these concerns, the technology created millions of jobs and contributed as much as 10.5% towards US GDP in 2020. As a result, some economists suggest that the movement towards AI will fundamentally change the world and the way we work and live but will not lead to large rises in unemployment. AI technology may create more jobs than it destroys.

Nonetheless, the danger remains that automation will lead to a society of winners and losers. These newly created jobs will require new skills and significant investment in training young people and retraining adults. Therefore, governments may need to implement targeted policies to ensure that any changes to structural unemployment are only short-lived. However, rising national debt alongside projections of low economic growth, as shown in Table 1.1, may reduce the ability of governments to deliver such policies.

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Table 1.1: Selected macroeconomic indicators for Japan and the US, 2020 to 2025

	Japan			US		
	Central government debt (% of GDP)	**Unemployment rate (%)**	**Real GDP growth (% change from previous year)**	**Central government debt (% of GDP)**	**Unemployment rate (%)**	**Real GDP growth (% change from previous year)**
2020	254.1	2.8	–4.6	133.9	8.1	–3.4
2021	256.9	2.8	2.4	133.3	5.4	6.0
2022*	252.3	2.4	3.2	130.7	3.5	5.2
2023*	250.8	2.3	1.4	131.1	3.0	2.2
2024*	251.0	2.3	0.8	131.7	3.0	1.7
2025*	251.3	2.3	0.6	132.5	3.1	1.7

*forecast

Source: IMF, 2021

(a) Using the information in Table 1.1, compare the change in projected real GDP growth of Japan with that in the US between 2022 and 2025. [2]

(b) With the help of a production possibility curve (PPC) diagram, demonstrate the likely impact of increased investment in AI on the Japanese economy in the long run. [2]

(c) With the help of a demand and supply diagram, consider the impact of additional investment in AI on the price and output of a US carmaker. [4]

(d) Assess the possible impact on unemployment in Japan as a result of the increased investment in AI. [6]

(e) Assess the likely impact of the growth of AI on the specialisation and trade of a country such as Japan. [6]

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Section B

Answer **one** question.

EITHER

2 **(a)** With the help of a demand and supply diagram, explain how the introduction of an indirect tax affects equilibrium in a market **and** consider the extent to which the incidence of the tax will fall on the consumer. [8]

(b) Assess whether the improved provision of information is likely to be the best method to reduce the consumption of demerit goods. [12]

OR

3 **(a)** With the help of a formula, explain the meaning of income elasticity of demand **and** consider the extent to which a rise in income will increase the consumption of **all** goods and services. [8]

(b) Assess whether an estimate of the price elasticity of demand for a product is likely to be more useful to a firm than an estimate of its price elasticity of supply. [12]

Section C

Answer **one** question.

EITHER

4 **(a)** Explain what is meant by a depreciation of the exchange rate **and** consider whether a depreciation is likely to increase domestic real output. [8]

(b) Assess whether contractionary fiscal policy is likely to be the best way to reduce a current account deficit on the balance of payments. [12]

OR

5 **(a)** With the help of an aggregate demand and aggregate supply diagram, explain how a decrease in interest rates could cause economic growth **and** consider whether economic growth will always result in inflation. [8]

(b) Assess whether economic growth is always desirable for an economy. [12]

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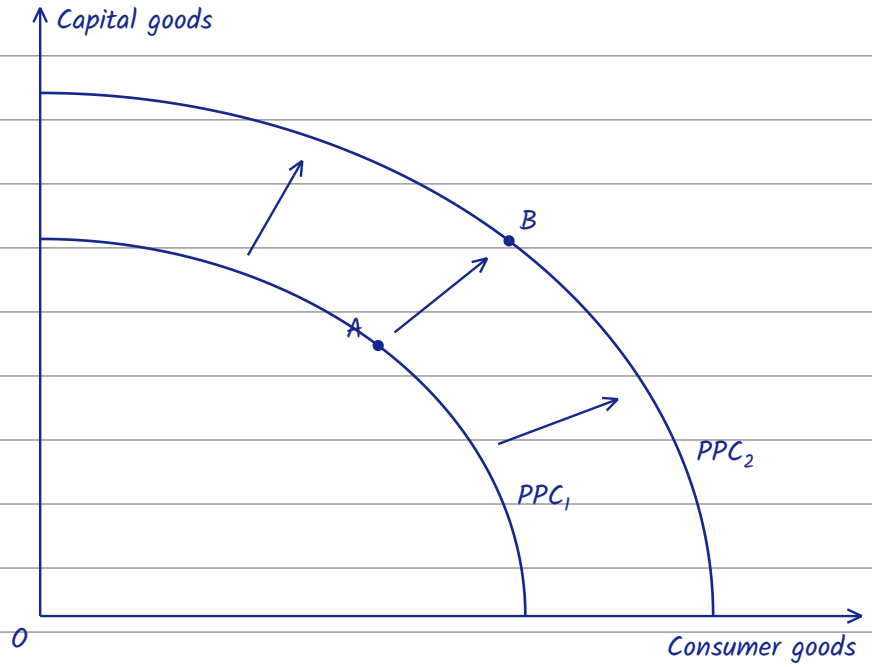
Surname	StemUp Model Solution
Answer booklet	Write the question number in the left-hand margin at the start of each answer.

Question number

Answers for paper 9708/22 (all questions answered)

1(a) Both countries are projected to have positive but slowing real GDP growth between 2022 and 2025. Japan's growth is lower throughout, falling from 3.2% to 0.6% (average 1.5%), while US growth falls from 5.2% to 1.7% (average 2.7%), so the US slows by more percentage points (3.5 compared with 2.6).

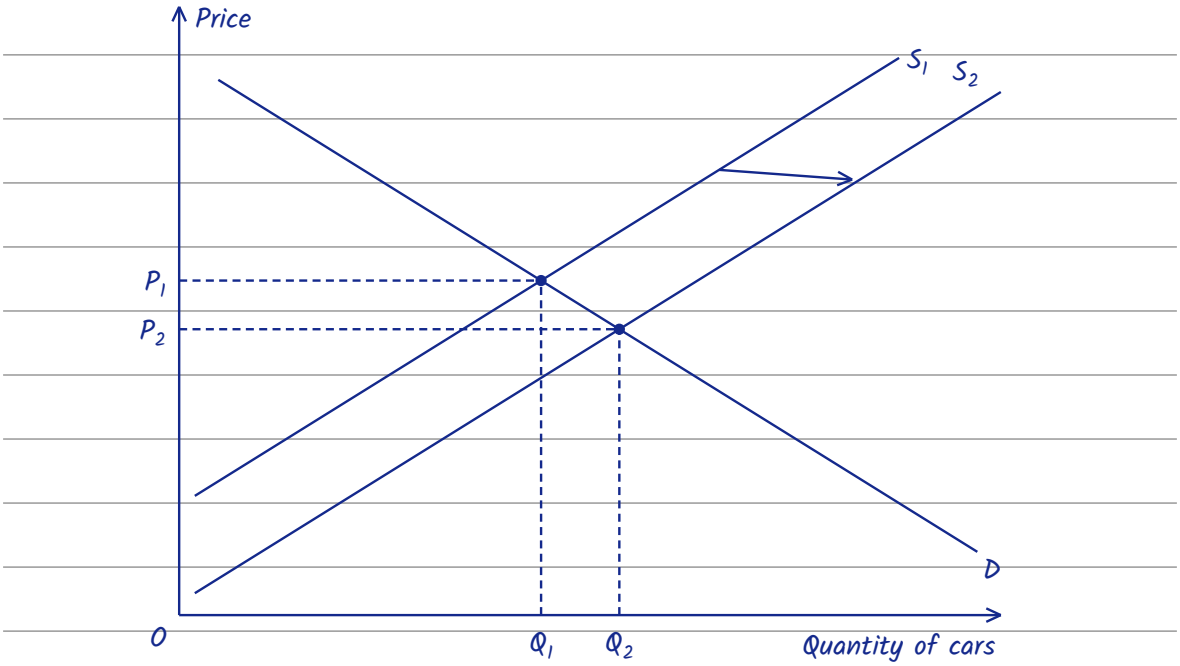
1(b) Investment in AI increases the quantity and quality of capital and raises labour productivity, so Japan's productive capacity increases. The PPC shifts outward from PPC1 to PPC2, so Japan can produce more of both goods, moving from A to B.



1(c) AI investment, such as robots on the production line, lowers the carmaker's costs of production per unit and reduces human errors, so it is willing and able to supply more cars at each price. The supply curve shifts to the right from S1 to S2. At the

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original price P1 there is now excess supply, so the price falls and the new equilibrium is at P2 and Q2: the price of cars falls from P1 to P2 and output rises from Q1 to Q2.



The size of the effect depends on the price elasticity of demand: if demand is price elastic, output rises a lot and the price falls only a little.

1(d) In the short run, unemployment in Japan may rise. AI machinery and robots replace labour, for example factory workers on assembly lines or taxi and truck drivers replaced by driverless vehicles. These workers lack the skills for the new jobs, so this is structural unemployment, and the extract suggests up to 38% of jobs in a similar economy (the US) could be at risk by the mid-2030s.

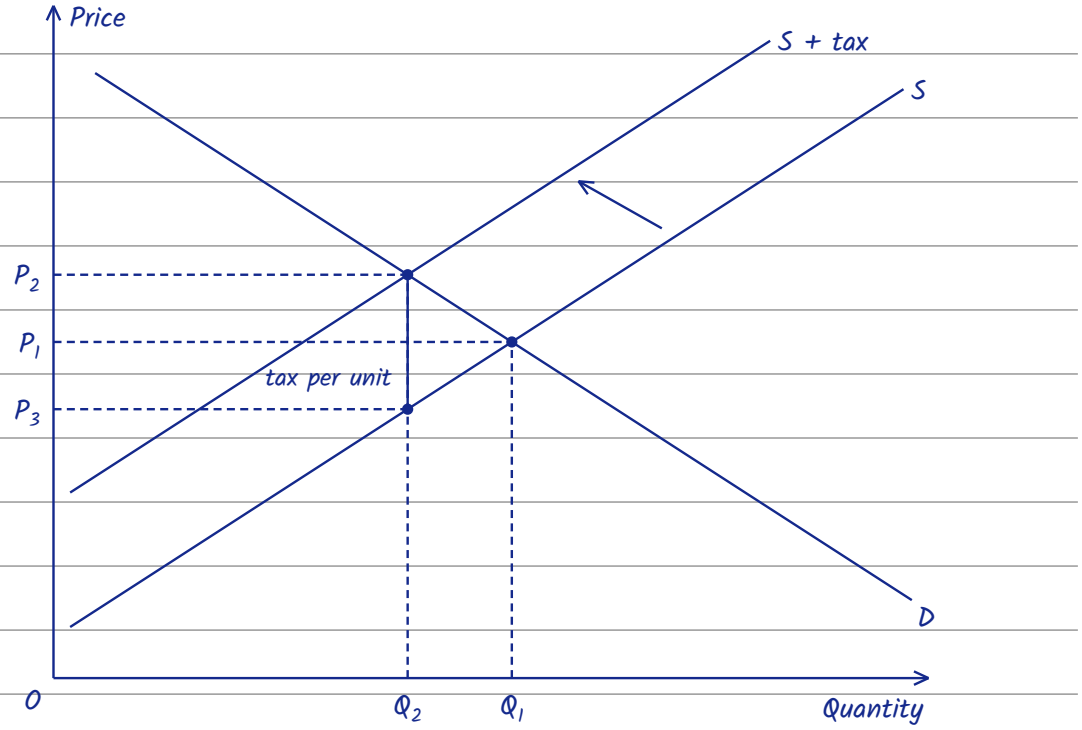
In the long run, however, more jobs may be created, as happened with the internet, which created millions of jobs. Japan is the leading supplier of industrial robots, so demand for workers to design, build, program and maintain AI machinery will rise. Lower costs also raise firms' profits and real incomes, increasing spending and creating jobs in other industries.

Overall, the impact depends on the time period and on retraining. Japan's

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	unemployment is already low and forecast to fall to 2.3%, with an ageing population and labour shortages, so AI may fill gaps rather than cause large rises in unemployment. However, its debt of over 250% of GDP may limit retraining spending, so some short-run structural unemployment is likely.
1(e)	AI raises productivity and lowers costs in industries where Japan already invests heavily, such as robotics and AI technology (200 to 300 AI companies, third in research spending). This lowers its opportunity cost of producing these goods, strengthening its comparative advantage, so Japan can specialise further in high-tech goods. Lower costs and prices improve its international competitiveness, so exports of robots and AI products increase and Japan gains more from trade, importing goods it produces less efficiently. However, there are drawbacks. Over-specialisation makes Japan dependent on a narrow range of industries, so if world demand for AI products falls, or the US and China become more competitive, its exports and output fall. Workers in declining industries face structural unemployment, and rivals using AI may erode the advantage. Overall, AI is likely to increase Japan's specialisation and trade, as it is a world leader in robotics. The benefit depends on how quickly rival countries adopt AI and whether Japan avoids relying too heavily on one sector.
2(a)	An indirect tax is a tax on expenditure, paid to the government by producers when goods are sold, for example a specific tax of a fixed amount per unit or an ad valorem tax as a percentage of price. Governments often use them to discourage consumption of demerit goods such as cigarettes. The tax increases the producer's cost of supplying each unit, so the supply curve shifts to the left (up) from S to S + tax by the amount of the tax per unit. At the old price P1 there is excess demand, so the price rises. The new equilibrium is

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at P2, Q2: the price paid by consumers rises from P1 to P2 and quantity demanded falls from Q1 to Q2. Producers receive only P3 after paying the tax.



The incidence on the consumer is the rise in price P1P2 per unit, and the producer bears P1P3. The consumer share depends on the price elasticity of demand (PED). The more price inelastic demand is, as for cigarettes with few substitutes and addiction, the more of the tax the producer can pass on, so the larger the share paid by consumers. If demand is price elastic, consumers switch to substitutes and producers must absorb most of the tax. The price elasticity of supply also matters. In conclusion, consumers bear most of the tax only when demand is more price inelastic than supply, which is often the case for the demerit goods that governments tax.

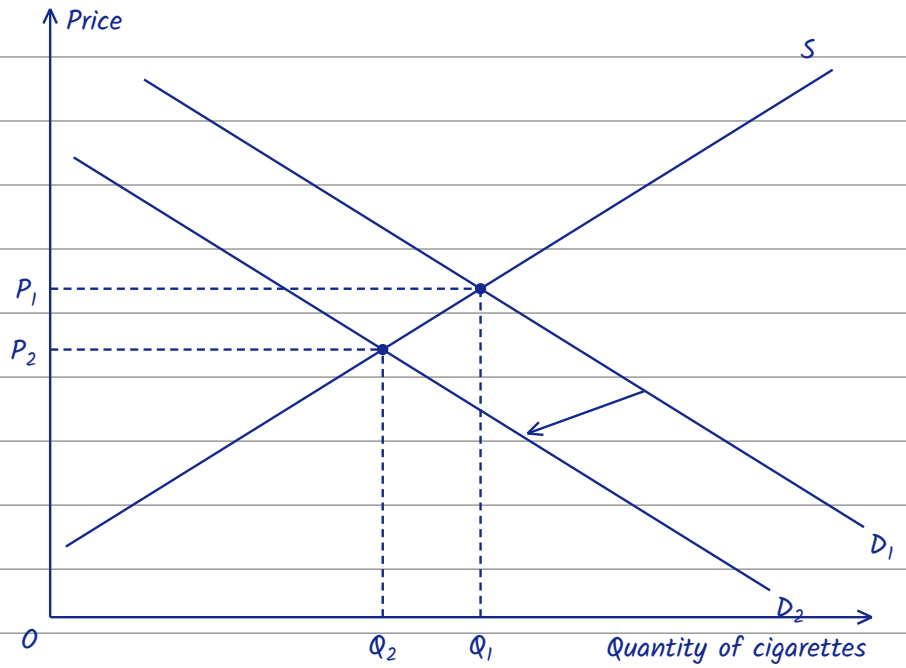
2(b)

Demerit goods, such as cigarettes, alcohol and sugary drinks, are goods that are more harmful to consumers than they realise and are overconsumed in a free market, because of information failure and negative externalities. Improved provision of information means the government gives consumers accurate

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information about the true costs of consumption, through health campaigns, warning labels and education in schools.

Better information corrects the information failure. Consumers become aware of the full private costs, such as the risk of cancer, so they value the good less and demand shifts to the left from D1 to D2. The price falls from P1 to P2 and consumption falls from Q1 to Q2, closer to the socially optimum level.



This method has advantages. It tackles the cause of the market failure, it respects consumer freedom of choice, it is relatively cheap, and it does not raise prices for poor households. Its effect can be long lasting, as people who never start smoking change their habits for life.

However, it has limitations. Many demerit goods are addictive and consumed out of habit, so consumers who know the risks may still buy them. Peer pressure and irrational behaviour, such as putting short-term pleasure ahead of long-term health, also limit its effect. Information takes time to change behaviour and campaigns have an opportunity cost.

Alternatives may work more quickly. An indirect tax raises the price and gives revenue for health care, although demand is price inelastic, so consumption falls

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only a little and the tax is regressive. A minimum price has similar effects but may encourage illegal markets. Regulation backed by fines, such as banning sales to young people or smoking in public places, reduces consumption directly, but needs costly enforcement.

In conclusion, improved information is not likely to be the best method on its own, because addiction makes demand unresponsive in the short run. It is the best long-term method for young people, but it works best combined with taxation and regulation; the best mix depends on how harmful and how addictive the good is.

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

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

A normal good has a positive YED, so demand rises when income rises. For example, if incomes rise by 10% and demand for restaurant meals rises by 20%, YED = 20 ÷ 10 = +2. As YED > 1 the good is a luxury (income elastic), so consumption rises more than proportionately. A necessity such as bread has YED between 0 and 1, so its consumption rises only a little. An inferior good has a negative YED: when incomes rise, demand falls, as consumers switch from cheap goods such as bus travel or supermarket own brands to better alternatives such as cars or branded goods.

Therefore a rise in income will not increase consumption of all goods and services. It increases consumption of normal goods, by most for luxuries, but reduces consumption of inferior goods. The extent also depends on the size of the rise and on whether it is expected to be permanent. In conclusion, most goods are normal, so total consumption rises, but not every good.

3(b) Price elasticity of demand (PED) measures the responsiveness of quantity demanded to a change in price: PED = % change in quantity demanded ÷ %

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

A PED estimate is useful because it shows how total revenue changes when the firm changes its price. If demand is price inelastic (PED between 0 and −1), raising the price increases total revenue because quantity falls by a smaller percentage. If demand is price elastic, a price cut increases revenue. It also helps firms decide how much of a tax to pass on and whether price discrimination is possible.

However, PED estimates have limitations. They are based on past data and assume ceteris paribus, but competitors' prices, the prices of substitutes and complements, incomes and tastes change. PED shows revenue, not costs, so the effect on profit is uncertain, and elasticity varies along the demand curve.

A PES estimate is useful because it shows how quickly the firm can respond to a rise in demand. A firm with inelastic supply may decide to invest in spare capacity, hold stocks, pay overtime or outsource production, so it can sell more when demand rises and does not lose sales to rivals.

However, PES is mainly determined by factors the firm finds hard to change, such as the time period and the nature of production, and making supply more elastic, for example holding stocks, raises costs.

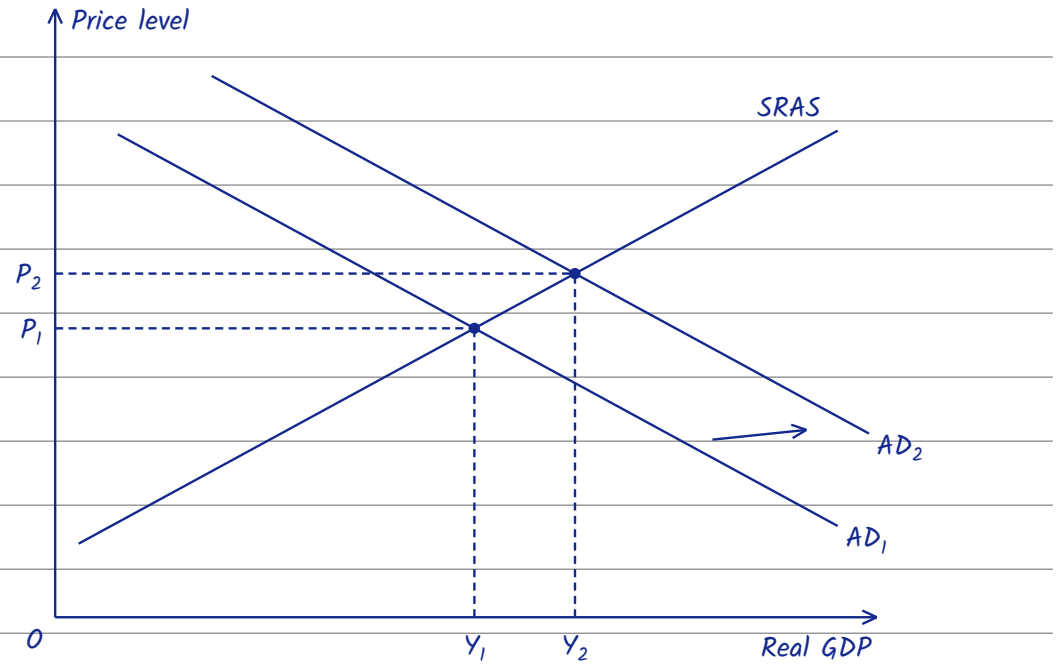
On balance, PED is likely to be more useful, because pricing decisions are made frequently and directly affect revenue, whereas PES mainly matters when demand changes. However, it depends on the firm: for a farmer facing volatile demand, or a firm in a fast-growing market, PES may be just as important. The two are most useful together, alongside cost data, to judge profit.

4(a) An exchange rate is the price of one currency in terms of another currency, for example £1 = $1.25. A depreciation is a fall in the value of a currency in a floating

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exchange rate system, for example to £1 = $1.10. It happens when demand for the currency falls, such as when exports fall, or when supply of the currency rises, such as when imports rise or capital flows out.

A depreciation makes exports cheaper in foreign currency and imports more expensive in the domestic currency. Export volumes rise and import volumes fall, so net exports (X – M) increase. As X – M is a component of aggregate demand, AD shifts right from AD1 to AD2 and real output rises from Y1 to Y2, with a multiplier effect.



However, this depends on the price elasticity of demand for exports and imports. If demand is price inelastic, X – M may not improve, at least in the short run. It also assumes there is spare capacity: if the economy is at full employment, the rise in AD mainly causes inflation. Dearer imported raw materials also raise firms' costs, shifting SRAS left. In conclusion, a depreciation is likely to increase real output only if demand is elastic and there is spare capacity.

4(b) A current account deficit means that the value of money flowing out for imports of goods and services, primary income and secondary income is greater than the

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value flowing in. Contractionary fiscal policy is an increase in taxation or a reduction in government spending to reduce aggregate demand.

Contractionary fiscal policy reduces the deficit in two ways. Higher income tax reduces disposable income, so consumers spend less, including on imports. The amount of imports falls depends on the marginal propensity to import, which is high in many open economies. Lower AD also reduces demand-pull inflationary pressure, so domestic prices rise more slowly than those of trading partners. Exports become more price competitive and domestic consumers switch from imports to home-produced goods, so the current account improves.

However, this policy has significant costs. Lower AD reduces real output, so economic growth slows and cyclical unemployment rises, conflicting with other government objectives. Tax rises are unpopular and may reduce work incentives, and cuts to spending on education and infrastructure can harm long-term growth. It also does not tackle the cause if the deficit is due to a lack of competitiveness rather than excess demand.

There are alternatives. Contractionary monetary policy, a higher interest rate, also reduces spending but may cause the currency to appreciate, making exports dearer and worsening the deficit. A depreciation of the currency makes exports cheaper and imports dearer, but only works if demand is price elastic and it may cause cost-push inflation. Supply-side policies, such as training and investment in infrastructure, raise productivity and lower costs, improving competitiveness without reducing output, but take many years and their results are uncertain. Protectionism such as tariffs reduces imports but risks retaliation.

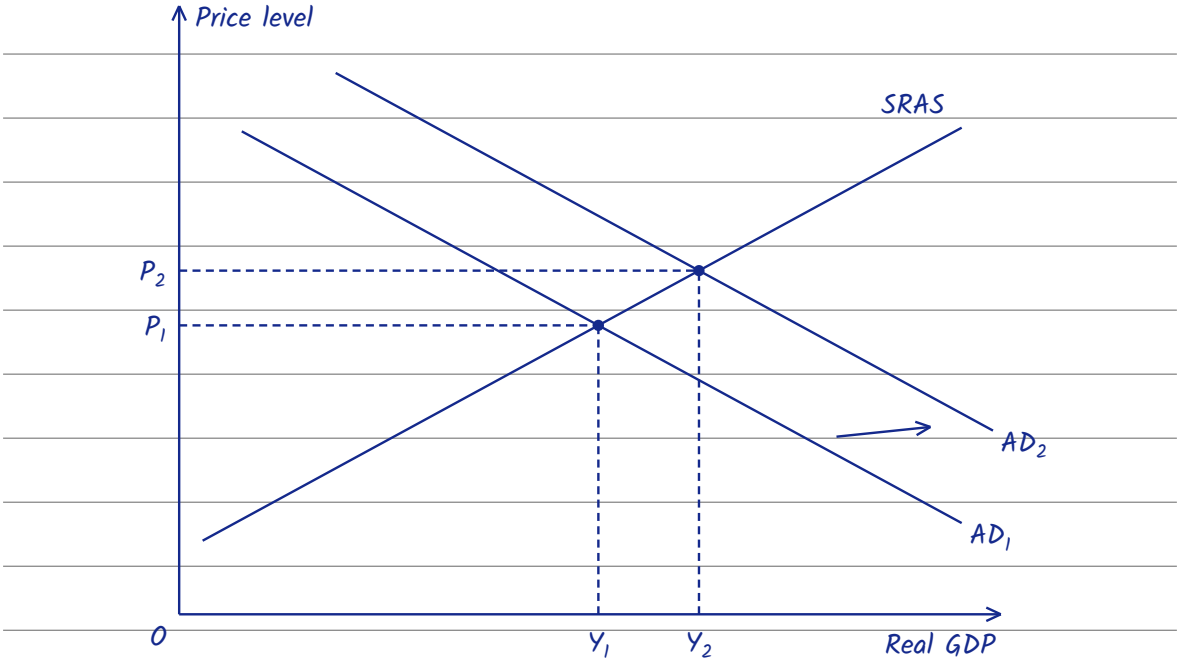
In conclusion, contractionary fiscal policy is likely to be the best way only in the short run, when the deficit is caused by excess domestic demand and inflation. If the deficit is caused by low productivity, supply-side policies are the best long-term solution, so a combination is likely to be most effective.

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5(a)

Economic growth is an increase in the real output (real GDP) of an economy over time. Inflation is a sustained rise in the general price level. The interest rate is the cost of borrowing and the reward for saving.

A decrease in interest rates makes borrowing cheaper and saving less rewarding. Households save less and borrow more to buy cars and houses, so consumption rises. Firms find the cost of financing capital lower, so more investment projects become profitable and investment rises. A lower interest rate may also cause the currency to depreciate, so net exports rise. As C, I and (X – M) are components of AD, AD shifts right from AD1 to AD2, and real GDP rises from Y1 to Y2, which is economic growth.



In the diagram the price level also rises from P1 to P2, so this growth causes demand-pull inflation. However, growth does not always cause inflation. If there is a lot of spare capacity, AS is very elastic, so output rises with little rise in prices. If growth comes from supply-side improvements, such as higher productivity or new technology, LRAS shifts right, so real GDP rises and the price level may even fall. In conclusion, growth only results in inflation when it is demand-led and the economy is close to full capacity.

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5(b)	Economic growth is an increase in the real output of an economy over time, measured by the percentage change in real GDP. Actual growth uses spare capacity, and potential growth is an increase in productive capacity, shown by an outward shift of the PPC or LRAS. Growth is desirable because it raises real incomes and living standards. As output rises, firms need more workers, so unemployment falls. Higher incomes and spending increase tax revenue and reduce spending on benefits, improving government finances, so the government can spend more on health care and education, raising life expectancy and literacy. Growth increases consumer and business confidence, encouraging investment, and higher productivity improves international competitiveness. However, growth also has costs. If it is demand-led and the economy is close to full capacity, it causes demand-pull inflation, reducing the real income of those on fixed incomes. Higher incomes increase spending on imports, so the current account may move into deficit. Rapid industrial growth uses up non-renewable resources and causes pollution and congestion, which are negative externalities that reduce quality of life. The benefits of growth may also go mainly to the rich and owners of capital, so inequality of income and wealth increases. There is also an opportunity cost: to grow in the future, consumption may need to be sacrificed now to produce capital goods. Whether growth is desirable therefore depends on its type and pace. Sustainable, supply-led growth raises output without inflation, whereas rapid demand-led growth may be followed by inflation and a recession. It also depends on the economy: for a low-income country, growth is needed to reduce absolute poverty, so the benefits clearly outweigh the costs; for a high-income country, the extra satisfaction may be smaller and the environmental costs larger. Real GDP also ignores leisure, the shadow economy and the distribution of income.

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In conclusion, economic growth is not always desirable. It is desirable when it is sustainable, non-inflationary and its benefits are widely shared, but government policies, such as progressive taxes and environmental regulation, are needed to limit its costs.