

Please write clearly in block capitals.

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I declare this is my own work.

INTERNATIONAL AS ECONOMICS

UNIT 1: THE OPERATION OF MARKETS, MARKET FAILURE AND THE ROLE OF GOVERNMENT

Thursday 6 January 2022 7.00am GMT Time allowed: 1 hour 45 minutes

Materials

For this paper you must have:

- the source booklet, provided as an insert (enclosed)
- a calculator, which you are expected to use where appropriate.

Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do **not** write outside the box around each page or on blank pages.
- Do **not** write in the source booklet.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- All working must be shown.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may use a bilingual dictionary for this exam.
- You may **not** use an English dictionary.

For Examiner's Use	
Question	Mark
1–15	
16	
17	
18	
19	
20	
21	
TOTAL	



J A N 2 2 E C O 1 0 1

Section A

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

Only **one** answer per question is allowed.

For each question completely fill in the circle alongside the appropriate answer.

CORRECT METHOD



WRONG METHODS



If you want to change your answer you must cross out your original answer as shown.



If you wish to return to an answer previously crossed out, ring the answer you now wish to select as shown.



0 1

Which one of the following statements describes a role of the price mechanism in a free market economy?

[1 mark]

A Distribute resources fairly

☐

B Ensure firms make abnormal profits

☐

C Raise government revenue

☐

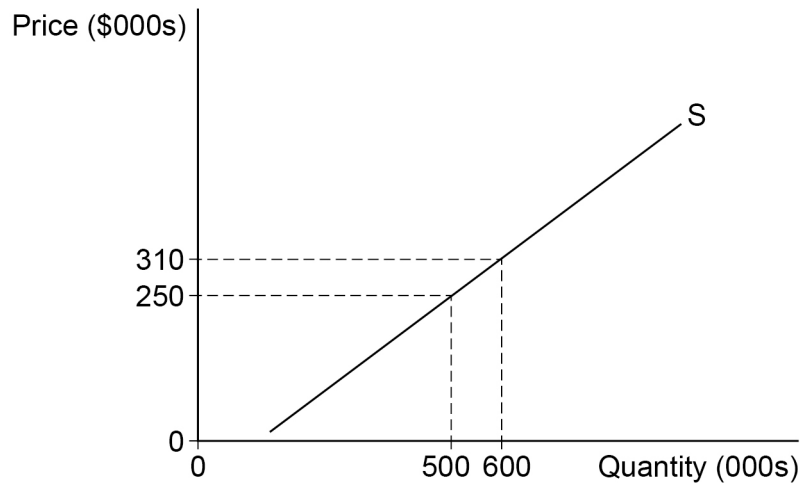
D Signal to firms to change their production

☒


0 2

Figure 1 shows the supply curve (S) for houses in a city.

Figure 1



If the price of houses rises from \$250 000 to \$310 000, the value of price elasticity of supply is:

[1 mark]

- A 0 ☐
- B Less than 1 ☒
- C 1 ☐
- D More than 1 ☐

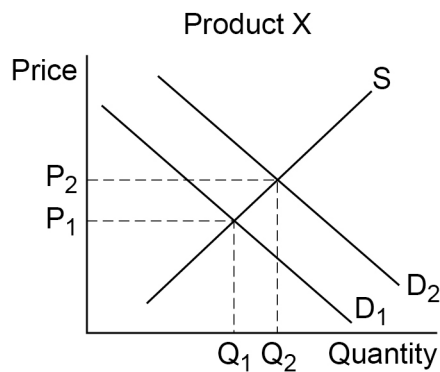
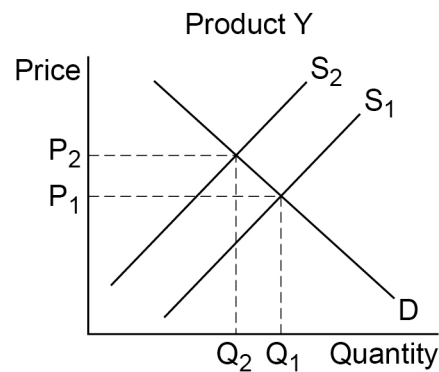
Turn over for the next question

Turn over ►



0 3

Figures 2 and 3 below show a change in the demand (D) for Product X and the resulting change in the supply (S) of Product Y.

Figure 2**Figure 3**

Which one of the following relationships is illustrated by the diagrams?

[1 mark]**A** Composite demand
☒
B Derived demand
☐
C Joint demand
☐
D Joint supply
☐

0 4

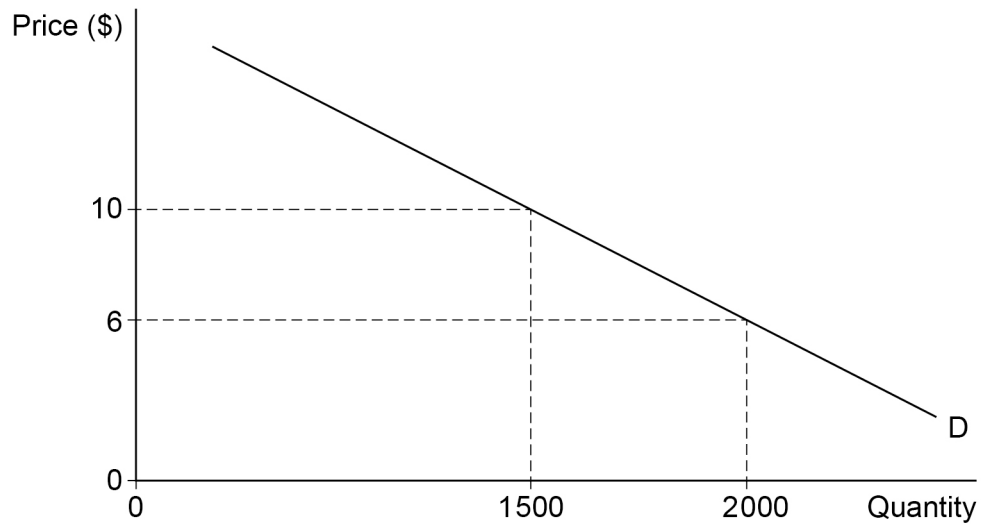
A government official makes a number of announcements on inequality. Which one of the following is a normative statement?

[1 mark]**A** Inequality must be a priority for the government to solve
☒
B Rising inequality means the poor are getting poorer
☐
C The minimum wage will rise to twice the level of unemployment benefit
☐
D The top rate of income tax is 50%
☐


0 5

Figure 4 shows the effect of a change in price on the quantity demanded (D) of a good.

Figure 4



What is the change in revenue when the price falls from \$10 to \$6?

[1 mark]

- A** A fall of \$3 000 ☒
- B** A fall of \$15 000 ☐
- C** A rise of \$3 000 ☐
- D** A rise of \$15 000 ☐

Turn over for the next question

Turn over ►



0 6**Table 1** shows the costs of production for a cafe.**Table 1**

Output (meals)	Total fixed cost (£)	Variable cost per unit (£)
10	3000	5
20	3000	5
30	3000	4
40	3000	3
50	3000	6
100	3000	7

At which level of output is the firm operating at its lowest average cost?

[1 mark]

- A** 10 ☐
- B** 40 ☐
- C** 50 ☐
- D** 100 ☒

0 7

Good Y has been classed by the government as being harmful to health when consumed. If the government decides to ban the sale of Good Y, which one of the following effects is most likely to be an unintended consequence of the ban?

[1 mark]

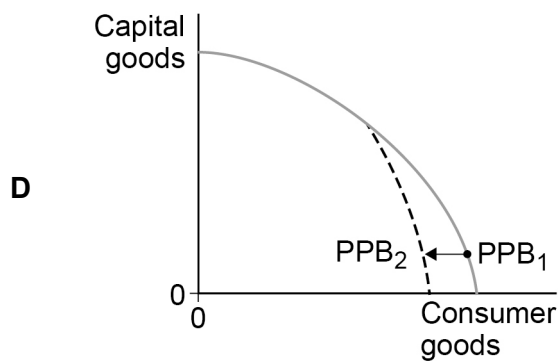
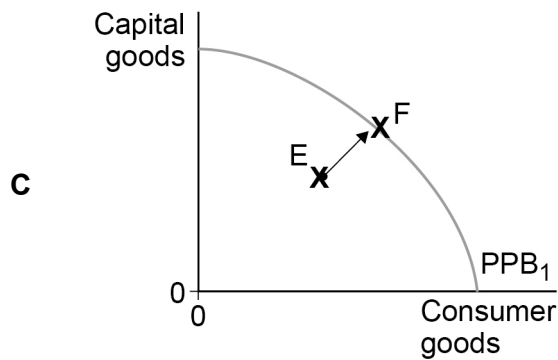
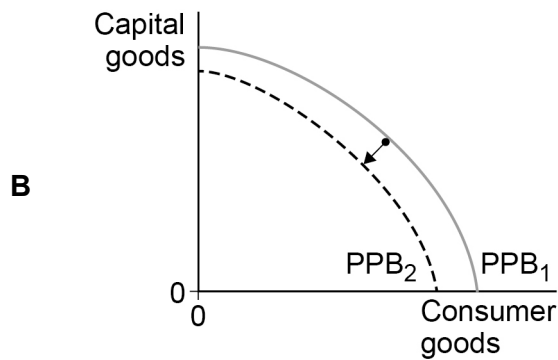
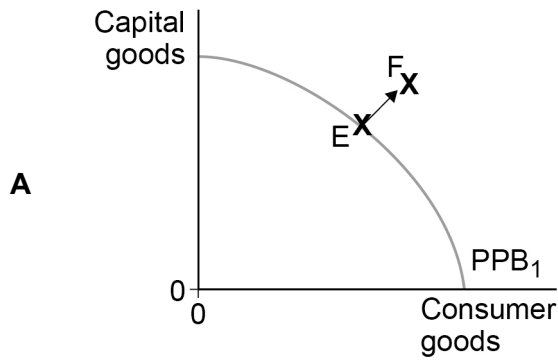
- A** A fall in the consumption of Good Y ☐
- B** A loss of tax revenue from the sale of Good Y ☐
- C** High costs of enforcing the ban ☐
- D** The production of new, more harmful substitute goods ☒



0 8

The four production possibility boundary (PPB) diagrams below all show changes to an economy.

Which one of the PPB diagrams shows the most likely impact of a natural disaster on an economy?

[1 mark]**Turn over ►**

0 9

Which one of the following occurs when there are economies of scale?

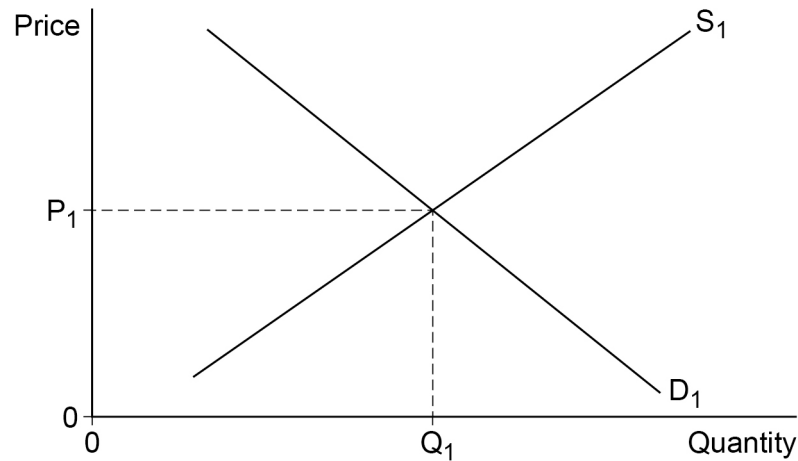
[1 mark]**A** Total costs change in direct proportion to output☐**B** Total costs fall at a faster rate than output☐**C** Total costs increase at a faster rate than output☐**D** Total costs increase at a slower rate than output☒**1 0**

Which one of the following characteristics is always present in a market that is a pure monopoly?

[1 mark]**A** Other firms in the market are all small☐**B** The concentration ratio is 100%☒**C** The monopoly eventually experiences diseconomies of scale☐**D** There are no barriers to entry and exit☐

1 1

Figure 5 shows the market for a good. P_1 and Q_1 represent the socially optimal price for the good and the socially optimal level of output.

Figure 5

The good creates negative production externalities. In comparison to the socially optimal level of output, what can be concluded about the price and quantity of the good in the free market?

[1 mark]

- A** Price is above P_1 and quantity is above Q_1
- B** Price is above P_1 and quantity is below Q_1
- C** Price is below P_1 and quantity is above Q_1
- D** Price is below P_1 and quantity is below Q_1

☐
☐
☒
☐

Turn over for the next question

Turn over ►



1 2

Table 2 shows the costs and benefits of a proposed new housing project being planned by a private sector developer. The developer calculates the costs and benefits of the project as follows:

Table 2

Total private benefits	€300m
Total third-party benefits	€75m
Total private costs	€200m
Total social costs	€400m

Which one of the following statements is false?

[1 mark]

- A** The housing project has both positive and negative externalities
- B** The housing project should be rejected by the town's planning authorities
- C** The housing project will make the developer a loss
- D** The positive externalities are lower than the negative externalities

☐☐☒☐

1 3

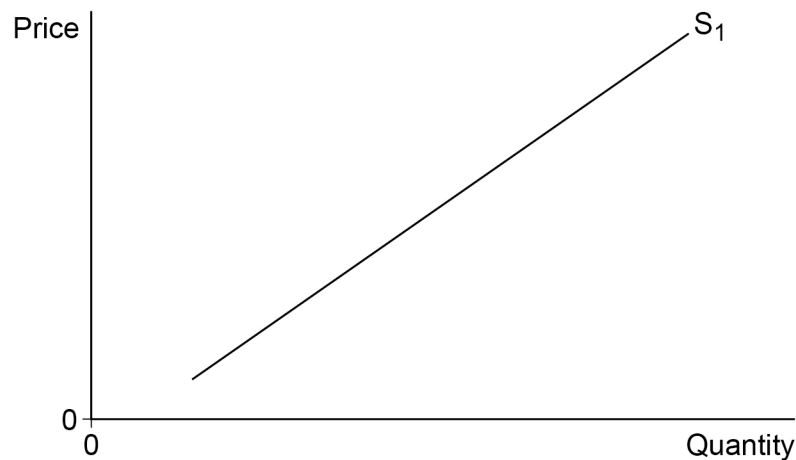
The winner of a competition can choose one of the following prizes:

- A baseball cap
- A cinema ticket
- A pizza meal voucher
- A t-shirt

The winner chooses the baseball cap. Her second choice is the t-shirt and her third choice is the cinema ticket. What is the opportunity cost of choosing the baseball cap?

[1 mark]**A** The t-shirt☒**B** The t-shirt and cinema ticket☐**C** The t-shirt, cinema ticket and pizza meal voucher☐**D** There is no opportunity cost☐**1 4**

Figure 6 shows the supply curve for a good. Which one of the following explains the upward slope of the supply curve?

Figure 6**[1 mark]****A** A higher price provides an incentive for firms to sell more☒**B** A lower price encourages consumers to buy more☐**C** As price rises, the total cost of production will fall☐**D** Price and quantity supplied change in opposite directions☐**Turn over ►**

1 5

Which one of the following is most likely to prevent a mobile phone network operator already in the market from earning abnormal profit?

[1 mark]

- A** High levels of brand loyalty
- B** Low barriers to entry into the mobile phone market
- C** Low growth of consumer demand for mobile phones
- D** Regulation allowing only a certain number of licensed firms

☐☒☐☐**15**

Section B

Look at the source booklet and answer **all** questions in the spaces provided.

Do **not** write in the source booklet.

1 6 . 1 Define 'public good' (**Extract C**, line 3).

[3 marks]

A public good is a good that is non-rival and non-excludable. Non-rival means that consumption of the good by one person does not reduce the amount available for others to consume. Non-excludable means that once the good is provided, it is not possible to prevent people who have not paid from consuming it, which leads to the free-rider problem.

1 6 . 2 Define 'cross elasticity of demand' (**Extract B**, line 16).

[3 marks]

Cross elasticity of demand is the responsiveness of the quantity demanded of one good (good A) to a change in the price of another good (good B). It is measured as the percentage change in quantity demanded of good A divided by the percentage change in the price of good B. It is positive for substitutes and negative for complements.

6

Turn over for the next question

Turn over ►



1 7

Extract A shows the changes in global airline passengers over time and the contribution of the aviation industry to global transport emissions.

You are advised to show your working for the calculations below.

1 7 . 1

Calculate the percentage change in global airline passengers between 1995 and 2010.

Give your answer to **two** decimal places.

[3 marks]

$$\text{Percentage change} = (\text{new} - \text{original}) \div \text{original} \times 100$$

$$= (2650 - 1300) \div 1300 \times 100$$

$$= 1350 \div 1300 \times 100 = 103.846...$$

$$= 103.85\%$$

1 7 . 2

In 2014, global CO₂ emissions from aviation were 600 million tonnes.

Calculate the global CO₂ emissions produced by trucks in 2014.

Give your answer to **two** decimal places.

[3 marks]

$$\text{Aviation} = 11\% \text{ of transport emissions} = 600 \text{ million tonnes}$$

$$1\% = 600 \div 11 = 54.5454... \text{ million tonnes}$$

$$\text{Trucks} = 34\%, \text{ so } 54.5454... \times 34 = 1854.545...$$

$$= 1854.55 \text{mt (million tonnes)}$$



1 8

Extract C (lines 1–2) states: ‘Worldwide carbon dioxide (CO₂) emissions from commercial flights are rising up to 70% faster than predicted.’

1 8 . 1

Explain why the demand for airline travel might affect global CO₂ emissions.

[6 marks]

Air travel is a major source of CO₂ emissions because aircraft burn large quantities of jet fuel, and Extract A shows aviation accounts for 11% of global transport emissions. The demand for jet fuel is a derived demand: airlines only demand fuel because consumers demand flights. So when the demand for air travel rises, airlines operate more flights, the demand for fuel rises and more CO₂ is emitted.

Extract A shows passenger numbers rising rapidly, from 1300m in 1995 to 3250m in 2015. As global economic growth raises incomes, demand for flights, a normal good, keeps increasing, so emissions keep rising, possibly faster than predicted.

These emissions are a negative externality: a cost to third parties, such as the damage from climate change, which is not paid by the airline or passenger. Ticket prices reflect only private costs, so the social cost of flying exceeds the private cost. Flights are therefore overconsumed compared with the social optimum, and CO₂ emissions are higher than is socially desirable.

Question 18 continues on the next page

Turn over ►



1 8 . 2

To what extent do the data suggest that demand for airline travel affects global CO₂ emissions?

Use the data in **Extract A** to help support your answer.

[6 marks]

The data suggest a strong link. Passenger numbers rose by 150%, from 1300m in 1995 to 3250m in 2015, while global CO₂ emissions rose by 54%, from 23 000mt to 35 500mt, and both peak in 2015. When passenger growth slowed between 2010 and 2015 (23%), emissions growth also slowed (8%).

However, the rises are not proportional: between 1995 and 2000 passengers rose by 31% but emissions by only 7%. Aviation (11%) is only the joint third largest transport source, alongside shipping, with cars at 40% and trucks at 34% in 2014, so road transport and other industries drive most emissions. More passengers need not mean more emissions if planes become more fuel efficient or fly fuller. Correlation does not prove causation, and data on aviation's share of total emissions over time would give a firmer conclusion.

Overall, demand for air travel does affect global CO₂ emissions, but only to a limited extent, as it is not the main driving force.

12



1 9

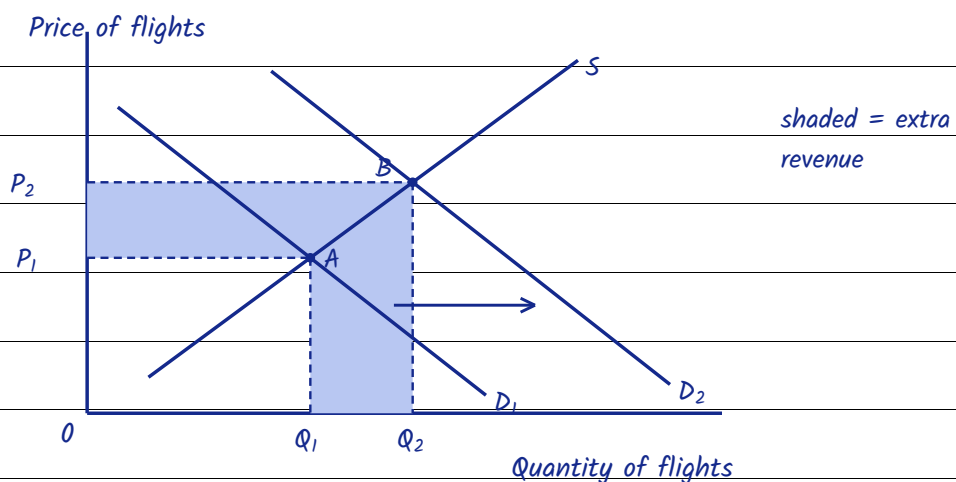
Extract B (lines 4–5) states: 'The BRIC (Brazil, Russia, India and China) countries contain 40% of the world's population and account for around one-fifth of global GDP.'

With the help of a diagram, explain why rising incomes in countries such as Brazil, Russia, India and China are likely to increase the revenue of airlines.

[9 marks]

Rising incomes in the BRIC countries, which contain 40% of the world's population and about one-fifth of global GDP (Extract B), will increase the demand for flights. Air travel is a normal good, so demand rises as income rises. It is likely to be a luxury good with a positive income elasticity of demand (YED) greater than 1, so demand rises more than proportionately to income. A growing middle class can afford foreign holidays, which are complementary to flights, and growth brings more jobs and foreign investment, raising demand for business travel.

In the diagram, higher incomes shift the demand for flights right from D_1 to D_2 .



At P_1 there is excess demand, so the price rises to P_2 and quantity supplied

Extra space extends from Q_1 to Q_2 . Total revenue ($P \times Q$) rises from OP_1AQ_1 to OP_2BQ_2 , a gain of the shaded area, as airlines sell more flights at a higher price.

The size of the rise depends on elasticity. In the short run the supply of flights is price inelastic, as aircraft and airport slots cannot quickly be increased, so the

Turn over ►



rise in demand mainly raises fares and revenue rises sharply. With such a large population in the BRIC countries, even a small rise in income per head could greatly increase airline revenue.

9

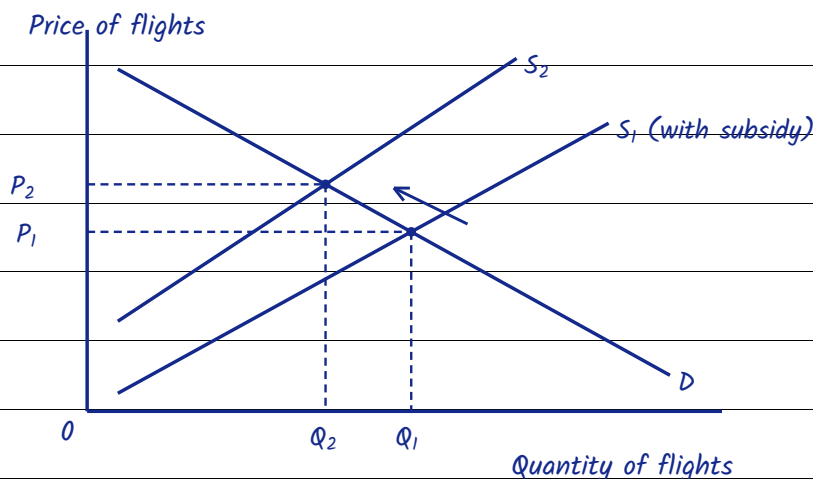
2 0

Extract C (line 12) states: 'Critics argue that governments should remove the subsidies given to many airlines.'

Analyse the likely effects on the market for flights of the removal of government subsidies to airlines.

[12 marks]

A subsidy is a payment by the government to producers that lowers their costs of production, such as fuel subsidies, wage subsidies or R&D grants, often given to national carriers.



Removing the subsidy raises airlines' costs, so supply decreases: the supply curve shifts left from S_1 (with subsidy) to S_2 . The price of flights rises from P_1 to P_2 and the quantity falls from Q_1 to Q_2 .

The size of these effects depends on the price elasticity of demand. Business



and long-haul flights have few substitutes, so demand is relatively inelastic: airlines can pass most of the higher cost on to passengers with only a small fall in flights, so consumers bear most of the burden. For short-haul leisure flights, cars and trains are close substitutes, so demand is more elastic: airlines must absorb more of the cost, cutting profits, and passengers switch to other transport.

Airlines will try to cut costs, by reducing the quality of service, cutting labour costs, dropping unprofitable routes or cutting investment in new planes, which may reduce dynamic efficiency. Airlines that relied on the subsidy may make

Extra space losses and leave the market.

Competition may change. If selective subsidies to national carriers are removed, there is a more level playing field and barriers to entry fall, so efficient low-cost airlines can compete, which may keep prices down and improve efficiency in the long run. However, if many airlines exit, the market could become more concentrated, giving the survivors more market power.

In the short run the main effects are higher fares and lower profits; in the long run supply is more elastic, so the effect falls more on the number of airlines and routes. Fewer flights would also reduce CO₂ emissions and the overconsumption of flights, and the government saves money that can be spent elsewhere.

Turn over for the next question

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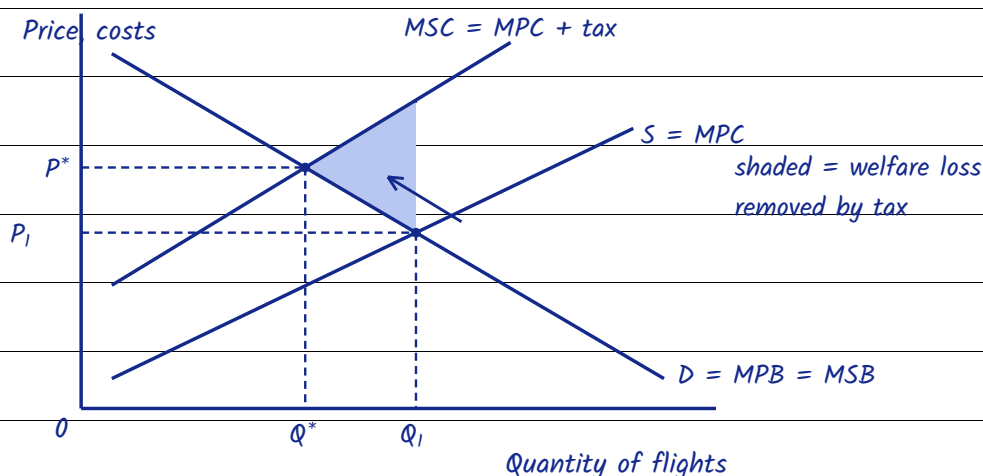
2 1

Extract C (lines 17–18) states: ‘taxes on the use of fuel and carbon emissions have been suggested as the most effective way to address the negative social impacts of air travel.’

Use the extracts and your knowledge of economics to assess whether indirect taxation is the most effective way to deal with the environmental effects of emissions from air travel.

[20 marks]

Air travel creates a negative externality: emissions of CO₂ contribute to climate change and harm third parties who are not part of the transaction, so the marginal social cost (MSC) of flights is greater than the marginal private cost (MPC). An indirect tax is a tax on spending, such as a tax on aviation fuel, a carbon tax on emissions or a tax on each passenger.



In the diagram, the free market produces Q_1 at price P_1 , where MPC meets demand, which is more than the socially optimal output Q^* where $MSC = MSB$.

A tax equal to the external cost shifts the supply curve up from MPC to $MPC + \text{tax} = MSC$, so the price rises to P^* and output falls to the social optimum Q^* .

The externality is internalised, the polluter pays, and the welfare loss (shaded)

is removed. The tax also gives airlines an incentive to switch to greener planes

and fuels, and passengers to greener transport, and it raises revenue which could be spent on research into cleaner fuels or on rail.

However, the effectiveness of the tax depends on the price elasticity of demand.

Business travel and long-haul flights have few substitutes, so demand is price



inelastic: the tax mainly raises fares and tax revenue rather than cutting flights, and emissions fall only slightly. Leisure travel on short-haul routes has close substitutes such as trains, so demand is more elastic and a tax would reduce flying by more. Freight and business users may simply pass the cost on. As incomes grow rapidly in countries such as the BRICs, demand for flights shifts right, so a tax may slow the growth in emissions rather than reduce them.

A second problem is setting the right level of tax. The external cost of CO_2 is very hard to measure in money terms, so the tax may be set too low, leaving overconsumption, or too high, causing a loss of the positive externalities of air travel such as trade, tourism and business links. Government failure is possible. Emissions from aviation are also global: if one country taxes flights, airlines may refuel or route through countries without the tax, so it only works well if applied internationally, which is difficult to agree. Taxes on flights are also regressive, taking a larger share of the income of poorer households, though this could be reduced by taxing frequent flyers or long-haul and business-class flights at higher rates. There are also costs of collecting the tax and it may be unpopular, and there may be unintended consequences such as a rise in car use, which is the largest source of transport emissions (40%).

There are alternative policies. Regulation, such as emission limits on aircraft engines or banning short-haul flights where rail exists, gives certainty about the outcome, but it does not raise revenue, is costly to monitor and gives no incentive to reduce emissions below the limit. Tradable pollution permits set a cap on total emissions, so the reduction is certain, and firms that cut emissions cheaply can sell permits, so emissions are cut at least cost; however, the cap may be set too high and permits are complex to administer. Subsidies for greener fuels, electric aircraft and rail tackle the problem from the supply side and do not raise fares, but they cost the government money and the technology

Turn over ►



may take many years to develop. Information campaigns may change behaviour but are likely to have only a small effect.

The use of the revenue also matters. If the revenue is hypothecated to compensate those harmed by emissions, or to fund greener aircraft and high-speed rail, the policy is much more effective; if it simply goes into general government spending, the tax only works through the fall in flights. There is also a trade-off: the more successful the tax is at reducing flying, the less revenue it raises.

Whether indirect taxation is the most effective way depends on several factors: the price elasticity of demand for different types of flight, whether the tax can be set close to the true external cost, whether countries agree to apply it internationally, and how the revenue is used. It also depends on the time period: in the short run demand is inelastic and greener planes are not available, but in the long run the tax encourages investment in cleaner technology.

In conclusion, indirect taxation is an effective policy because it internalises the externality, makes the polluter pay and raises revenue, but on its own it is unlikely to be the most effective way, as demand is price inelastic and the external cost is hard to measure. It is most effective as part of a package: an internationally agreed carbon tax combined with a cap on emissions through permits and with the revenue used to subsidise greener fuels and rail travel.

END OF QUESTIONS



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