

Chapter 8 Market failure and externalities

Answers to Knowledge checks

- 8.1** The forms of market failure introduced so far are externalities, information failure, public goods, merit/demerit goods, inequity and imperfect competition.
- 8.2** The difference lies in the external costs — costs that are not incurred by private firms but are imposed on society.
- 8.3** The presence of a negative production externality causes overproduction.
- 8.4** The presence of a positive consumption externality causes underconsumption.
- 8.5** In the presence of a positive production externality, too little of the good will be produced. Each unit of output that is produced below the society optimum imposes a cost equal to the vertical distance between *MSC* and *MPC*. The area therefore needs to represent the difference between marginal social cost and marginal benefit over the range of output between the optimum output and the free market level of output.
- 8.6** There are several potential externality effects associated with smoking tobacco. One is the danger of passive smoking — or simply the impaired enjoyment of non-smokers having to breath smoky air. In the longer term, the higher costs of healthcare for smokers must be met by non-smoking taxpayers.
- 8.7** School dropout rates may be high because parents undervalue the education of their children, or fail to perceive the extent to which society benefits from having a well-educated population. This could be seen as a negative consumption externality, as the perceived marginal private benefits are lower than marginal social benefits.

Answers to Exercises and Case studies

Exercise 8.1

The answers to this exercise are discussed in the main text.

Exercise 8.2

I cannot predict the examples that you will have identified. Externalities are common in everyday life, as there are many costs and benefits that are not explicitly reflected in market prices, affecting either production or consumption. Aspects of pollution, traffic congestion and the dropping of litter all tend to have negative effects. Positive externalities are perhaps less common, but I expect you came up with some. Perhaps your town has some striking buildings or statues from which you get pleasure, or perhaps your neighbour has a well-kept garden.

Exercise 8.3

- a** In this numerical example, marginal social benefit is equal to marginal private cost when the quantity produced is 50,000 per week. This is the quantity that would be produced in an unregulated market.
- b** At this level of output, marginal social cost is 90, whereas marginal private cost is 48, so the difference is 42.
- c** Marginal social benefit is equal to marginal social cost when production is at 40,000 per week. This is the best market situation for society as a whole.
- d** In order to induce firms to supply this quantity of output, firms would need to face marginal costs of 60, but marginal private cost is 32. A tax would need to bridge the difference, so would need to be set at 28.

Exercise 8.4

This is an example of a facility that could easily produce a NIMBY (Not-In-My-Back-Yard) syndrome. Waste disposal is one of those essential requirements of life, but everyone would prefer that the facilities for waste disposal were sited away from their own house.

Landfill as a form of waste disposal has been especially contentious, as it may have long-term costs for society in terms of permanently damaging the land. Nonetheless, society generates vast amounts of waste that have to be disposed of in some way. Recycling can help to reduce the size of the problem, but even with higher levels of recycling there will remain the problem of disposing of waste that cannot be recycled. Landfill is one way of doing this. If the necessity for this is accepted, then sites have to be chosen, and it may sometimes be that these sites have to be located in the vicinity of residential areas. There will then be local costs for residents, in terms of traffic to and from the site, the possible air pollution (smell) and perhaps an effect on house prices. These costs are borne by the local residents, and from their perspective they face high private costs from a new landfill site. The benefits — in terms of waste disposal — accrue to society more generally, so that there is a divergence between private and social costs. Most people suffering the costs of this would object under these circumstances.

Exercise 8.5

Externality A arises because marginal private benefit is greater than marginal social benefit. This is a negative consumption externality, resulting in too much of the good being produced.

Externality B arises because marginal private cost is greater than marginal social cost. This is a positive production externality, resulting in too little of the good being produced.

Externality C arises because marginal private benefit is lower than marginal social benefit. This is a positive consumption externality, resulting in too little of the good being produced.

Externality D arises because marginal social cost is greater than marginal private cost. This is a negative production externality, resulting in too much of the good being produced.

Case study 8.1

Healthcare: public or private?

- a** Market failure is a situation in which the free market mechanism does not lead to an optimal allocation of resources. This occurs when there is a divergence between marginal social benefit and marginal social cost, or between marginal private benefit and marginal social benefit. Economic decision-makers will take their decisions on the basis of the private costs and benefits, and therefore may fail to take adequate account of the costs and benefits to society, therefore producing a sub-optimal allocation of resources.
- b** The argument presented in the passage is couched in terms of a divergence between the benefits from vaccination received by an individual and those that may accrue to society at large. An individual faces a risk of infection from a disease, but may regard the probability of infection as being relatively low. However, the benefits for society from a widespread vaccination programme are much higher, as it lowers the chance of there being an epidemic. One way of interpreting this is to see the vaccination programme as being associated with a **consumption externality**. The possible effects can be seen in Figure A8.1, where in a private market, individuals choose to be vaccinated up to Q_{mkt} where marginal private benefit (MPB) is equal to marginal cost (MC). The optimal point for society is at Q^* , where marginal social benefit (MSB) is equal to marginal cost.

The shaded area indicates the deadweight cost on society if the market is left to its own devices.

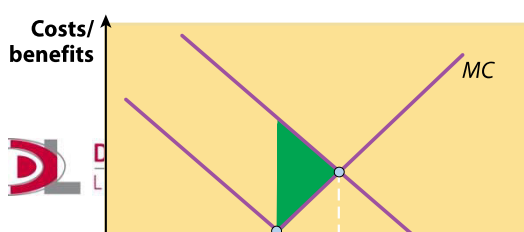
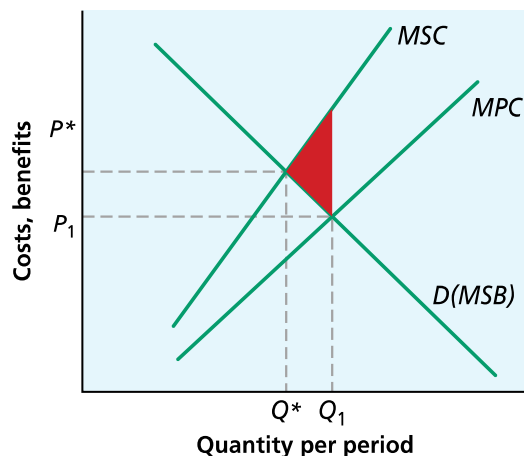


Figure A8.1 A consumption externality

Case study 8.2

Plastic oceans

- a** Plastic pollution caused by litter reaching the ocean is partly about responsible waste disposal, but a key part of the problem is the use of cheap plastic material in packaging (especially in a single-use situation). To the extent that this results from firms' use of plastics instead of more expensive alternatives, we can view this as an example of a negative production externality, in the sense that the marginal private cost (*MPC*) incurred by firms does not take into account the negative effects on society. In other words, *MPC* is lower than marginal social cost (*MSC*). The effect is shown in Figure A8.2.

**Figure A8.2** A production externality

In a free market, producers will choose to produce at Q_1 , where $MPC = D(MSB)$. However, from society's point of view, it would be better off at Q^* , where $MSC = MSB$. The shaded area shows the welfare cost imposed on society resulting from over-production.

- b** Given that the problem is occurring on a global scale, it is not enough for one country to take action in isolation. Coordinating action across countries is a major challenge to be overcome.

Answers to end-of-chapter questions

A Multiple-choice questions

- 1** c. A cost to a third party not reflected in market prices
- 2** c. $MPB < MSB$
- 3** b. Demerit good

B Knowledge and understanding questions

4 Reasons may include:

- Externalities
- Environmental issues
- Underconsumption of merit goods
- Overconsumption of demerit goods
- Monopoly power

Two reasons explained	4 marks
One reason explained AND one reason identified	3 marks
One reason explained OR two reasons identified	2 marks
One reason identified	1 mark

5 $MSC > MPC$ — price is too low and quantity is too high

An explanation of the effect of a negative production externality	up to 2 marks
A diagram showing a negative production externality	up to 2 marks

6 $MSB > MPB$ — price is too low and quantity is too low

An explanation of the effect of a positive consumption externality	up to 2 marks
A diagram showing a positive consumption	up to 2 marks

C Stimulus response question

- 7 a** Adeel will be willing to spend money on his garden up to the point where the marginal benefit he gains from the spending is equal to the amount he is spending. For example, if he buys a plant for £3 then he believes that he will gain at least £3-worth of enjoyment from that plant.

A full explanation	2 marks
A vague or partial explanation	1 mark

- b** The purchaser of Tina's house (and Tina) will gain from Adeel's spending on his garden. Neither Tina nor the prospective purchaser of the house was involved in the transaction between Adeel and the business selling the plants for his garden.

An explanation of the positive externality gained from Adeel's spending on his garden	up to 2 marks
A diagram showing a positive externality	up to 2 marks