

Exercise walk-through

Private costs and benefits, externalities and social costs and benefits ■ 7.4

eXercise

You must be able to

- distinguish private, external and social costs and benefits
- draw the marginal externality diagram and identify the welfare loss
- analyse negative and positive externalities

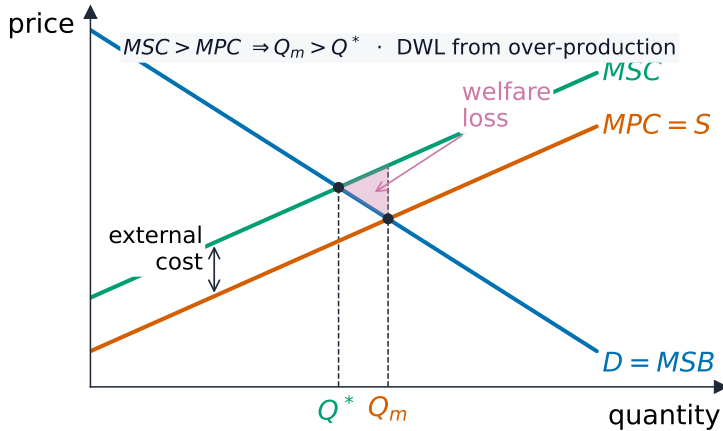
Method — Marginal externality analysis

- **Social cost** 社会成本 = private cost + **external cost** 外部成本; **social benefit** = private benefit + external benefit.
- **Negative externality:** $MSC > MPC \rightarrow$ market makes **too much**. **Positive externality:** $MSB > MPB \rightarrow$ **too little**.
- The gap creates a **deadweight welfare loss** 无谓损失 (the triangle between the social and private curves).

*A positive externality: the free market under-produces below the social optimum Q^**

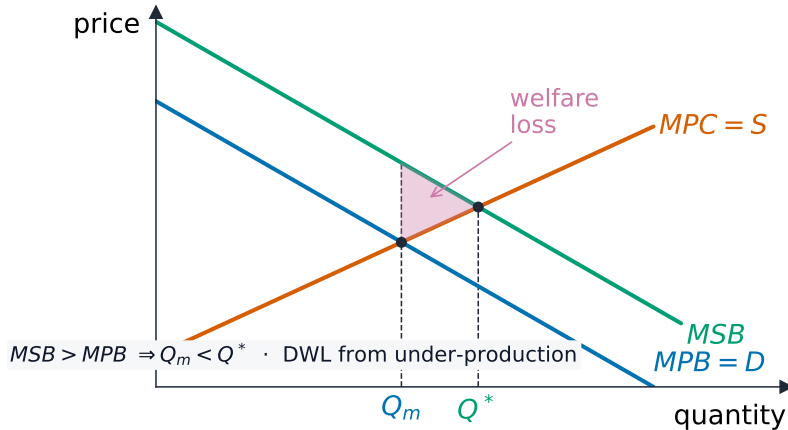
Answer shapes: an **Explain [up to 8]** answer should use a labelled marginal diagram (AO3); **Discuss [12]** adds a judgement (AO4).

Method — Marginal externality analysis



With a negative externality, MSC is above MPC and the market over-produces

Method — Marginal externality analysis



With a positive externality, MSB is above MPB, so the market under-produces

Practice 2.1 ■ 2 marks

Define the term *external cost*.

Solution 2.1

Method: Marginal externality analysis

Worked steps

a cost of production or consumption that falls on a third party, not the buyer or seller (2 for a clear definition; 1 for a partial idea).

Practice 2.2 ■ 1 mark

State the relationship between marginal social benefit and marginal private benefit for a good with a positive externality.

Solution 2.2

Method: Marginal externality analysis

Worked steps

marginal social benefit is greater than marginal private benefit (1).

Practice 2.3 ■ 2 marks

Define the term *deadweight welfare loss*.

Solution 2.3

Method: Marginal externality analysis

Worked steps

the loss of welfare (consumer plus producer surplus) when output is not at the socially optimum level (2 for a clear definition; 1 for a partial idea).

Exam-style 3.1 ■ 1 mark

At the socially optimum level of output:

- A** marginal private cost equals marginal private benefit
- B** marginal social cost equals marginal social benefit
- C** total cost equals total benefit
- D** marginal cost equals zero

Solution 3.1

Method: Marginal externality analysis

- A marginal private cost equals marginal private benefit
- B marginal social cost equals marginal social benefit** 
- C total cost equals total benefit
- D marginal cost equals zero

Worked steps

B. The social optimum is where $MSC = MSB$.

Exam-style 3.2 ■ 8 marks

Using a marginal diagram, explain why a good with a **positive externality** is under-produced by the free market.

Solution 3.2

Method: Marginal externality analysis

Worked steps

[8] AO1 1 + **AO3 diagram up to 4** (MPB, MSB above it, MPC; market output where $MPC = MPB$, optimum where $MSC = MSB$; welfare-loss triangle) + AO2/AO3 up to 3 — buyers consider only their private benefit, so the market produces where $MPC = MPB$; but the true social benefit is higher, so the optimum is greater → the good is under-produced and welfare is lost.

Exam-style 3.3 ■ 12 marks

Discuss the best way for a government to deal with the negative externality from car use.

Solution 3.3

Method: Marginal externality analysis

Worked steps

[12] AO1/AO2/AO3 up to 8 (diagram + policies) + AO4 up to 4. **Options:** a tax on fuel/congestion (internalises the cost but is regressive and inelastic), regulation (emissions limits — effective but hard to enforce), subsidising public transport (switches demand but is costly), tradable permits. Judgement: a mix usually works best — a tax plus better public transport — the best policy depends on the price elasticity of demand for car use and the ability to enforce it.