

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

Name: _____ Class: _____ Date: _____

Total: 26 marks

KEY WORDS externality 外部性 • private benefit 私人收益 • private cost 私人成本 • deadweight welfare loss 无谓损失
• social benefit 社会收益

Objective

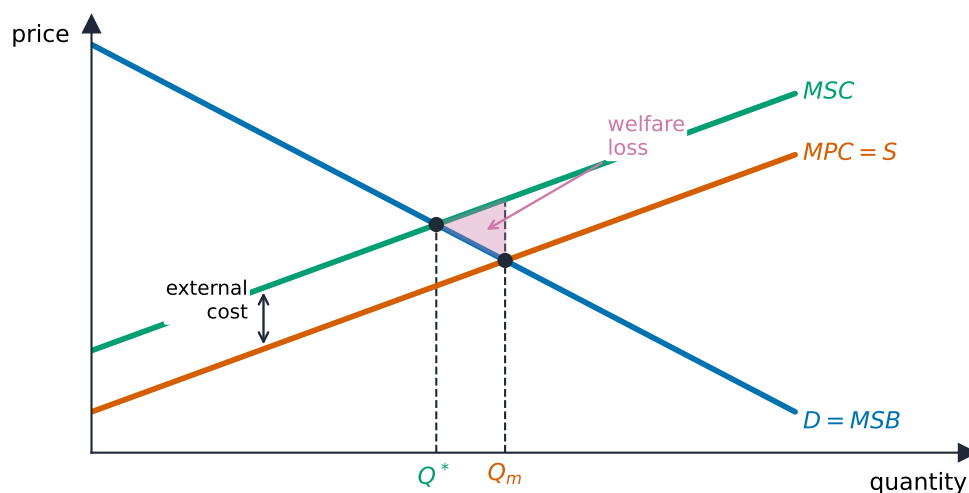
Build the skills to answer exam questions on **externalities and social costs and benefits** 外部性与社会成本收益 — **private, external and social** 私人、外部、社会 costs and benefits, **marginal analysis** 边际分析 (MPC, MSC, MPB, MSB), and **deadweight welfare loss** 无谓损失.

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

1 Worked examples

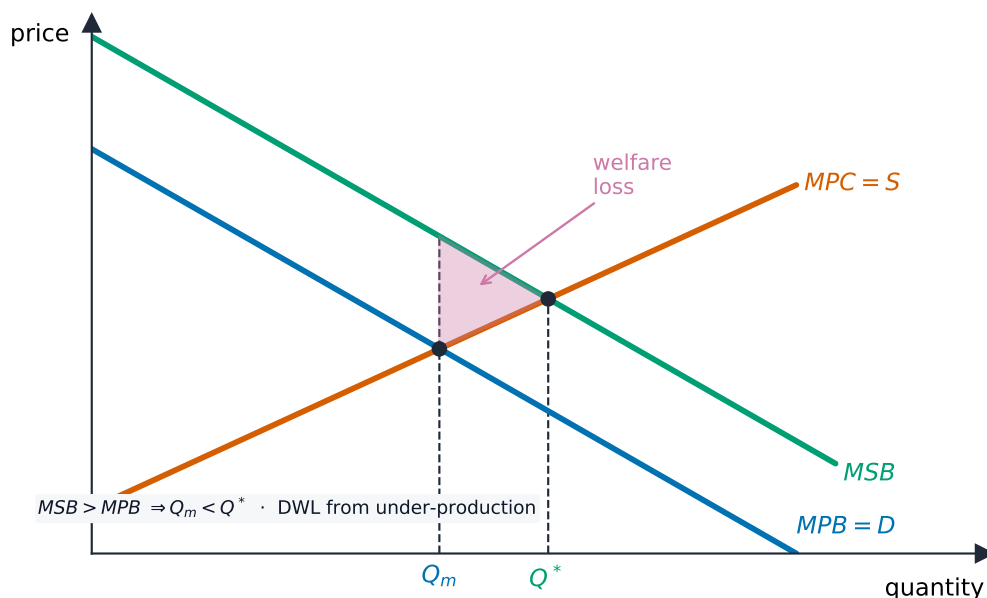
■ Marginal externality analysis



$$MSC > MPC \Rightarrow Q_m > Q^* \cdot \text{DWL from over-production}$$

The social optimum is where $MSC = MSB$; the market produces where $MPC = MPB$

- **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).



$$MSB > MPB \Rightarrow Q_m < Q^* \cdot \text{DWL from under-production}$$

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).

2 Practice

2.1 Define the term *external cost*. [2]

2.2 State the relationship between marginal social benefit and marginal private benefit for a good with a positive externality. [1]

2.3 Define the term *deadweight welfare loss*. [2]

3 Exam-style questions

3.1 At the socially optimum level of output: [1]

- **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

3.2 Using a marginal diagram, explain why a good with a **positive externality** is under-produced by the free market. [8]

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

Solutions

Economics answers are marked by **level of response** against the assessment objectives: award **AO1** knowledge, **AO2** application, **AO3** analysis and **AO4** evaluation.

2.1 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).

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

2.3 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).

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

3.2 [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.

3.3 [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.