

3.1 Market failure and equity

Name: _____ Class: _____ Date: _____

Total: 23 marks

KEY WORDS externality • public good

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Objective

Diagnose externalities with a labelled MSC/MSB diagram, explain public goods and common pool resources, and interpret the Lorenz curve and Gini coefficient (syllabus 2.8–2.9 and the equity question, SL).

1 Key knowledge and worked examples

Market failure toolkit. $MSC = MPC + \text{external cost}$; $MSB = MPB + \text{external benefit}$; the social optimum sits where $MSB = MSC$. On the shared diagram the market trades at (100, 20); with an external cost of 6 the optimum is (92, 24) – over-production of 8 and a welfare-loss triangle of 24; with an external benefit of 6 the optimum is (108, 16) – under-consumption of 8. Public goods: non-rival + non-excludable → free-riders → non-provision. Common pool resources: rival + non-excludable → over-use. Quintile shares 5/10/15/20/50 draw a Lorenz curve with Gini 0.40.

2 Practice

2.1 Define an externality and give one negative and one positive example. [2]

2.2 State the two properties of a public good and name the problem they create for private provision. [2]

2.3 Distinguish a common pool resource from a public good by rivalry and excludability. [2]

2.4 Write the MSC and MSB relationships and state the social-optimum condition. [2]

2.5 Quintile income shares are 5, 10, 15, 20 and 50 percent. State the Lorenz curve's cumulative points and interpret a Gini coefficient of 0.40 for this economy. [4]

3 Exam-style questions

3.1 (*Original, Paper 1 style.*) A factory's production imposes an external cost of 6 per unit. On the diagram the market trades at (100, 20) and MSC crosses MSB at (92, 24). Using a labelled diagram, explain why the market over-produces, identify the size of the over-production and the welfare-loss triangle, and explain one policy that corrects it. [5]

3.2 (*Original.*) Vaccination carries an external benefit of 6 per unit; on the diagram the social optimum is (108, 16). Explain, with a diagram, the policy that moves the market there, and state one limitation of that policy. [3]

3.3 (*Original, equity.*) Explain why an efficient market outcome may still fail the equity test, naming one instrument that trades the two against each other. [3]

Solutions

2.1 An externality is a cost or benefit of a transaction falling on a third party not involved in it (1). Negative: pollution from production (1). Positive: vaccination protecting others (1).

2.2 Non-rival and non-excludable (1). They create the free-rider problem – no one can be made to pay, so private firms cannot provide the good profitably (1).

2.3 A common pool resource is RIVAL but non-excludable (each fish caught is gone); a public good is non-rival AND non-excludable (lighting for one is lighting for all).

2.4 $MSC = MPC + \text{external cost}$; $MSB = MPB + \text{external benefit}$; the social optimum is where $MSB = MSC$.

2.5 Cumulative points (0, 0), (20, 5), (40, 15), (60, 30), (80, 50), (100, 100) (2). A Gini of 0.40 means the area between the Lorenz curve and the line of equality is 40 percent of the whole triangle (1): moderate-to-high inequality – the richest fifth takes half of all income while the poorest fifth takes one-twentieth (1).

3.1 Diagram: MPB (demand) and MPC (supply) crossing at (100, 20); MSC drawn 6 above MPC, crossing MPB at (92, 24) (1). The market ignores the third-party cost, so for every unit between 92 and 100 society's cost exceeds its benefit – over-production of 8 units (1), shown as the shaded triangle between MSC and MPB over that gap (area 24 on the diagram) (1). Policy: a tax of 6 per unit equal to the marginal external cost raises MPC to MSC and moves output to 92 (1); evaluation – the right size of tax depends on valuing the external cost, and firms may pass it on or relocate (1).

3.2 A positive consumption externality calls for a SUBSIDY equal to the marginal external benefit (6 per unit), shifting supply down by 6 (1): quantity rises from 100 to the optimum 108 and the consumer price falls from 20 to 16 (1). Limitation: the subsidy costs the taxpayer (here 6 per unit on 108 units) and the external benefit is hard to value precisely (1).

3.3 The price mechanism answers “for whom?” by willingness AND ability to pay, so it rewards resource ownership, not need: an allocation can be efficient while leaving the poor without basics (equity failure, not market failure). One instrument with its trade-off: progressive taxation with transfers buys equity but may weaken work incentives (the efficiency-equity trade-off); or minimum wages raise pay at the possible cost of jobs.

Local review guidance: externality answers DRAW both equilibria and the shaded triangle – at SL the diagram carries the marks, not the algebra; (R1 2.5) the Gini is interpreted in words, with the share data; (R1 3.3) the instrument named with BOTH sides of its trade-off. This is authored classroom guidance.