

Exercise walk-through

# 6.2

## Externalities

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AP Microeconomics

# Find the affected person and the missing marginal value

**Externality** : an uncompensated effect on a third party outside the transaction.

| Situation                      | Missing value                              | Social curve               |
|--------------------------------|--------------------------------------------|----------------------------|
| Factory smoke harms neighbours | <b>Negative externality</b> in production  | MSC above MPC              |
| Vaccination protects others    | <b>Positive externality</b> in consumption | MSB above MPB              |
| Smoker's own health loss       | Private effect on the user                 | Not automatically external |

Identify the affected side. Do not automatically put every externality on a cost curve.

## Pollution: calculate the market's private choice

**Known values: dollars per unit; Q per period**

$MPB=MSB=100 - Q$ ;  $MPC=20 + Q$ . External harm is \$20 per unit. Find the private equilibrium.

The private supply curve does not include the harm imposed on residents.

## Pollution: calculate the market's private choice

**Known values: dollars per unit; Q per period**

$MPB=MSB=100 - Q$ ;  $MPC=20 + Q$ . External harm is \$20 per unit. Find the private equilibrium.

Buyers and sellers equate their private marginal values:

$$MPB = MPC$$

$$100 - Q = 20 + Q$$

$$Q_m = (100 - 20)/2 = 40 \text{ units per period}$$

$$P_m = 100 - Q_m = 100 - 40 = \$60 \text{ per unit}$$

The private supply curve does not include the harm imposed on residents.

## Pollution: include the cost to residents

### Same market, social decision

$MSC = MPC + \text{external cost} = 40 + Q$ ;  $MSB = 100 - Q$ . Which quantity maximizes total net benefit?

The market produces 10 units too many. The inefficient units are Q30 to Q40.

## Pollution: include the cost to residents

### Same market, social decision

$MSC = MPC + \text{external cost} = 40 + Q$ ;  $MSB = 100 - Q$ . Which quantity maximizes total net benefit?

$$MSB = MSC$$

$$100 - Q = 40 + Q$$

$$Q^* = (100 - 40)/2 = 30 \text{ units per period}$$

At  $Q=30$ , both social marginal values are \$70. At private  $Q=40$ ,  $MSC$  is \$80 but  $MSB$  only \$60.

The market produces 10 units too many. The inefficient units are  $Q=30$  to  $Q=40$ .

## Exercises 2.1-2.3

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**2.1** Define an externality.

[1]

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**2.2** State whether a negative externality causes over- or under-production.

[1]

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**2.3** Name a policy to correct a negative externality.

[1]

## Exercises 2.1-2.3

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**2.1** Define an externality.

[1]

**2.1**

- a cost or benefit that falls on a third party outside the transaction
- 

**2.2** State whether a negative externality causes over- or under-production.

[1]

**2.2**

- overproduction
- 

**2.3** Name a policy to correct a negative externality.

[1]

**2.3**

- a Pigouvian tax (or tradable permits)

## Exercises 3.1-3.2

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**3.1** A negative externality causes the market to

[1]

☐

**A** underproduce

**B** overproduce

**C** produce the efficient amount

**D** stop producing

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**3.2** A tax set equal to the external cost of a good is called a

[1]

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**A** tariff

**B** Pigouvian tax

**C** subsidy

**D** quota

## Exercises 3.1-3.2

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**3.1** A negative externality causes the market to

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- A underproduce
- B overproduce
- C produce the efficient amount
- D stop producing

**3.1 B**

- overproduce.

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**3.2** A tax set equal to the external cost of a good is called a

[1]

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- A tariff
- B Pigouvian tax
- C subsidy
- D quota

**3.2 B**

- Pigouvian tax.

## Exercise 3.3 (a)

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**3.3** A factory pollutes a river, harming nearby residents.

(a) Name the type of externality.

[1]

## Exercise 3.3 (a)

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(a) Name the type of externality.

[1]

(a)

- a negative externality

## Exercise 3.3 (b)

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**3.3** A factory pollutes a river, harming nearby residents.

(b) State whether the market over- or under-produces.

[1]

## Exercise 3.3 (b)

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**3.3** A factory pollutes a river, harming nearby residents.

(b) State whether the market over- or under-produces.

[1]

(b)

- it overproduces

## Exercise 3.3 (c)

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**3.3** A factory pollutes a river, harming nearby residents.

(c) Name a corrective policy.

[1]

## Exercise 3.3 (c)

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**3.3** A factory pollutes a river, harming nearby residents.

(c) Name a corrective policy.

[1]

(c)

- a Pigouvian tax (or tradable permits)