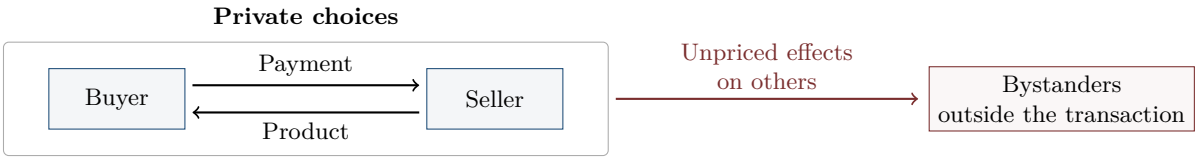
Handout 09 - ECON 101 (Fall 2026)

Externalities and Public Goods

1 The Market Does Not Count Every Cost and Benefit

Buyers and sellers can make a trade that benefits them while harming someone else—or pass up a trade that would help others. An **externality** is a side effect on bystanders whose interests are not fully reflected in the decision.

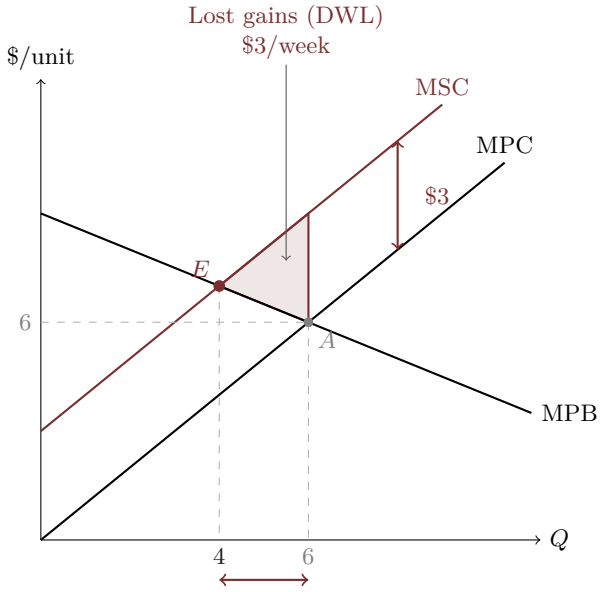


Compare **two separate illustrative markets**: paper bundles and first-aid training places. Both use the familiar private curves $P = 9 - Q/2$ and $P = Q$. Here P is dollars per unit and Q is units per week. Without intervention, **six units trade at $6** in each market. Assume competition and constant external effects of $3 per unit.

1.1 Count the effects on people outside the transaction

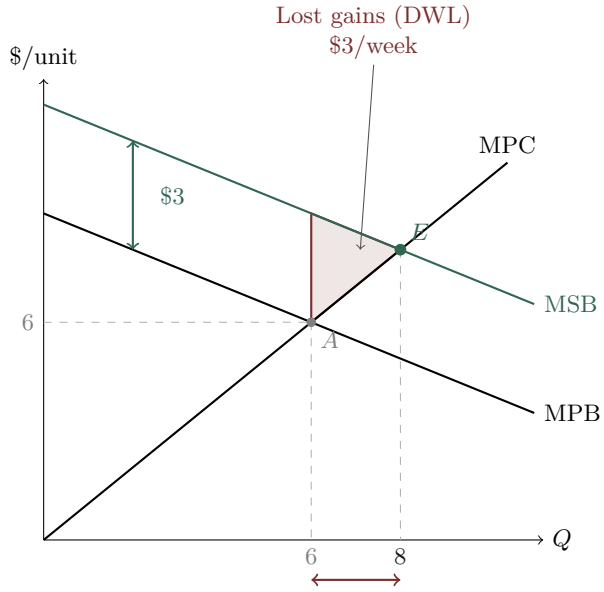
Demand shows **marginal private benefit (MPB)**; supply shows **marginal private cost (MPC)**. Social benefit and cost also count bystanders.

Paper: $3 of external harm per bundle



Market: 6; efficient: 4. The two extra units cost society more than buyers value them.

Training: $3 of external benefit per place



Market: 6; efficient: 8. The two missing units would benefit society more than they cost.

Marginal social cost (MSC) adds external harm to MPC; this harm is the worksheet's *marginal damage cost (MDC)*. Marginal social benefit (MSB) adds external benefit to MPB. Efficient quantity E is where **MSB equals MSC**; the outlined triangles show deadweight loss.

A price change alone redistributes gains between buyers and sellers. An externality concerns an unpriced effect on bystanders. Graph heights measure marginal benefits or costs; page 2 shows the policy's payments.

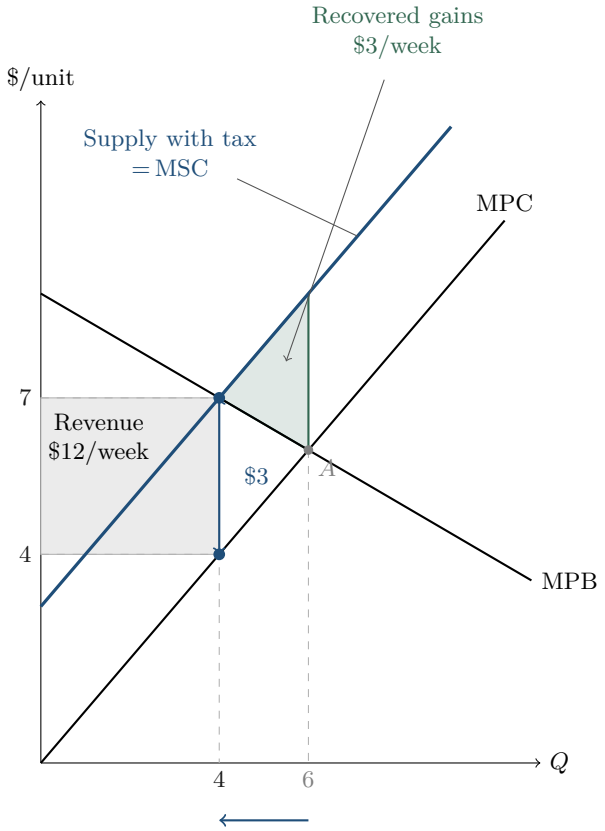
Where to revisit the material. Stevenson and Wolfers, *Principles of Microeconomics*, 3rd ed., §§10.1–10.2, pp. 242–252; Module 9 slides, PDF pp. 9–32; Worksheet 9, Q1, Q2, and Q6. Slide references count PDF pages.

2 Correct the Incentive, Then Recheck the Outcome

The problem on page 1 is a gap between private and social incentives. A **corrective tax** makes decision makers face an external cost; a **corrective subsidy** rewards an external benefit. In these examples, setting either policy at \$3 per unit brings the market to the efficient quantity.

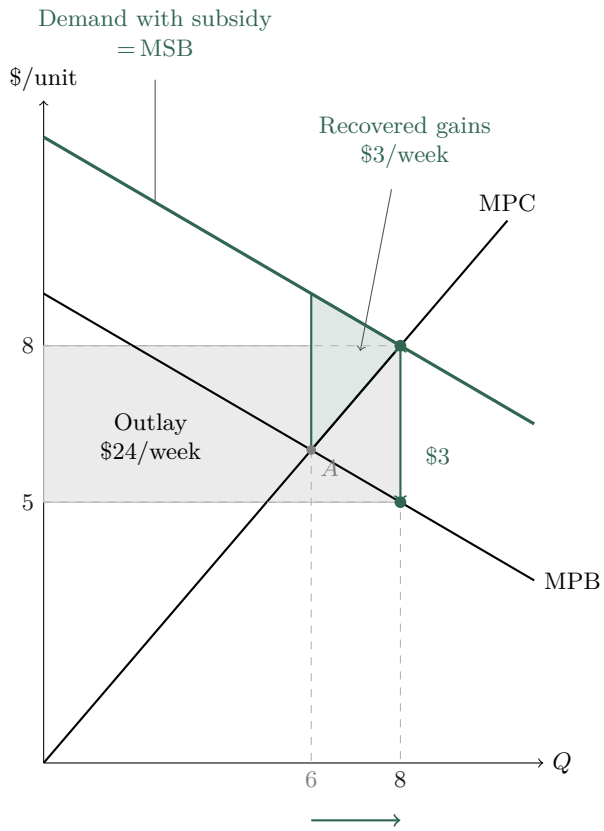
2.1 The familiar price wedges can recover lost social gains

Paper: a \$3 corrective tax



Buyers pay \$7; sellers receive \$4. Four bundles trade. The tax-inclusive supply curve coincides with MSC, so the new quantity accounts for the harm to others.

Training: a \$3 corrective subsidy



Buyers pay \$5 net; sellers receive \$8. Eight places trade. The subsidy raises buyers' willingness to pay sellers by the external benefit, bringing trade to the efficient quantity.

2.2 Separate real gains and losses from government payments

For paper, cutting output from six to four forgoes \$3 of benefits net of production costs on those two trades, but avoids \$6 of external harm. **The net social gain is \$3 per week.** Four bundles still cause \$12 of harm: an efficient quantity need not eliminate every external cost.

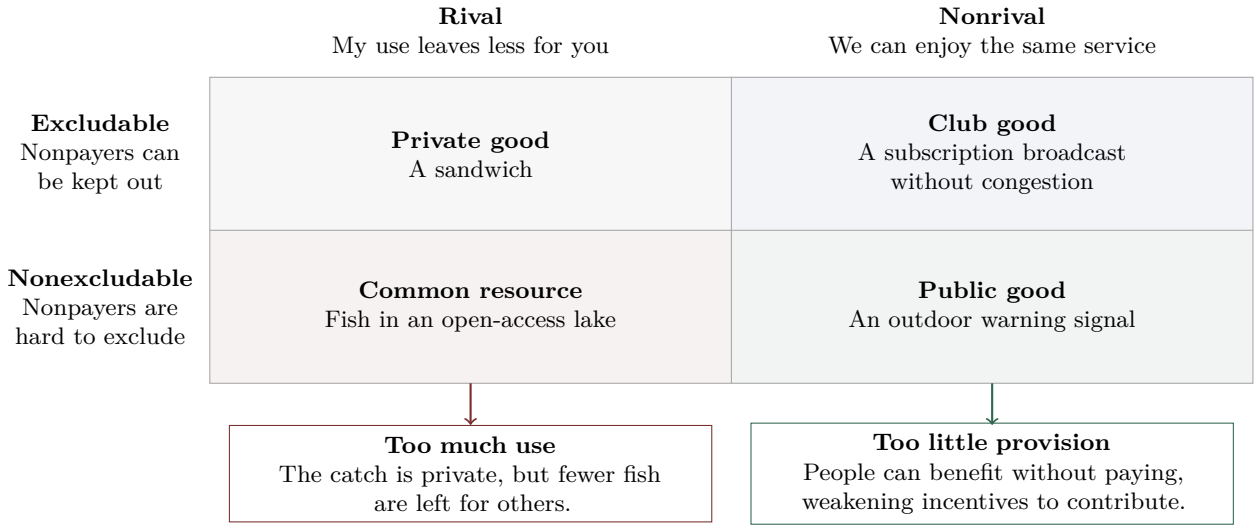
The tax's \$12 revenue is a transfer, and it is not automatically paid to harmed bystanders. For the subsidy, subtract the \$24 government outlay when adding up surplus, and include the external benefits. **Government receipts and spending are different from the triangles of recovered gains.**

Handouts 6–7 considered policies in an otherwise efficient market. Here, the same price wedges correct a preexisting problem. Private bargaining, tradable permits, and rules offer other routes; their feasibility depends on information, enforceable rights, and the costs of reaching or enforcing an agreement.

Where to revisit the material. Textbook §10.3, pp. 252–260, and §10.5, pp. 265–266; Module 9 slides, PDF pp. 34–59; Worksheet 9, Q3. Handouts 6–7 explain the price wedges and government accounting.

3 Shared Access Can Mean Too Little Provision or Too Much Use

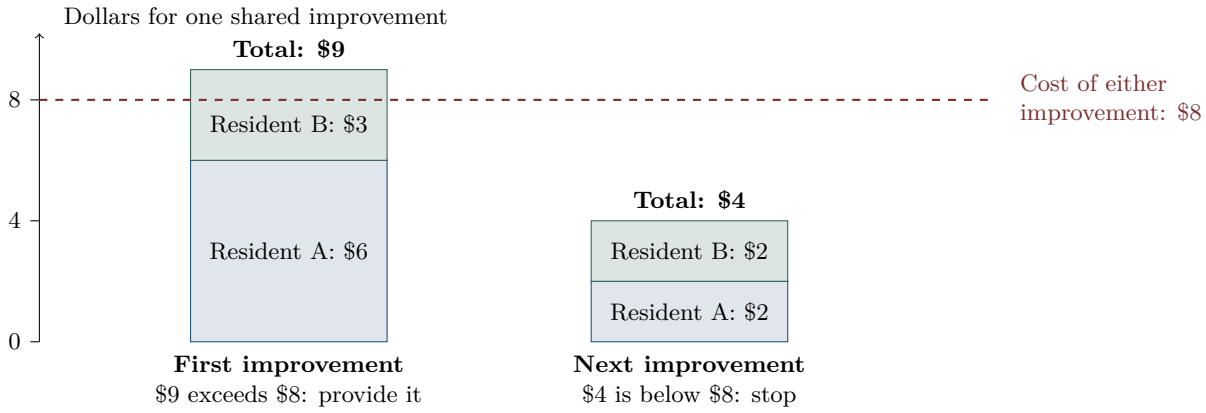
Two questions help classify a good. **Can nonpayers be kept out?** And **does one person's use leave less for others?** The answers describe excludability and rivalry, respectively. They depend on the access rules and congestion, rather than on who provides the good.



The public-good problem is **free riding**: benefiting without contributing. The common-resource problem is **overuse**: each user ignores costs imposed on others. Enforceable access or use rules can help prevent the tragedy of the commons.

3.1 For one shared improvement, add everyone's benefit

Suppose two residents share park lighting. Each enjoys the *same* improvement. The bars show their benefits from two successive improvements, each costing \$8.



Neither resident alone gains \$8 from the first improvement, yet their combined \$9 benefit covers its cost. **Add dollar benefits at the same quantity**; do not add separate quantities of this shared service. That is the logic of vertically adding public-good benefit curves.

Community agreements or public funding can coordinate payment; a private contractor can install the lights. Public goods are nonrival and nonexcludable, whoever provides them. Fund only investments whose benefits exceed costs.

Where to revisit the material. Textbook §10.4, pp. 260–265; Module 9 slides, PDF pp. 60–61 and 64–85, especially 79–81; Worksheet 9, Q4–Q5.