Economics

6th edition

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Chapter 5

Externalities, Environmental Policy, and Public Goods

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Externalities and Economic Efficiency

Externality: a benefit or cost that affects someone who is not directly involved in the production or consumption of a good or service.

- Think of an externality like a *side-effect*.

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Types of externalities

Negative externality: an economic activity that impose a negative effect on an unrelated third party.

Examples:

Burning fossil fuels

Positive externality: is the positive effect an activity imposes on an related third party.

Examples:

Driving an electric vehicle

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Discussion

1, burning oil, gas, and coal

2, industries that adds effluent

3, overfishing

4, a neighbor listening to loud music late at night

5, a foreign firm that demonstrate up-to-date technologies to local firms

6, cigarette smoke

7, Increased education of individuals

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Private cost and External cost

Private cost is the cost borne by the producer of a good or service.

External cost: such as cost of pollution.

Social cost is the total cost of producing a good or service, and it is equal to the private cost plus any external cost.

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Private benefit and External benefit

Private benefit is the benefit received by the consumer of a good or service.

External cost: such as benefit to others resulting from your college education.

Social benefit is the total benefit from consuming a good or service, and it is equal to the private benefit plus any external benefit.
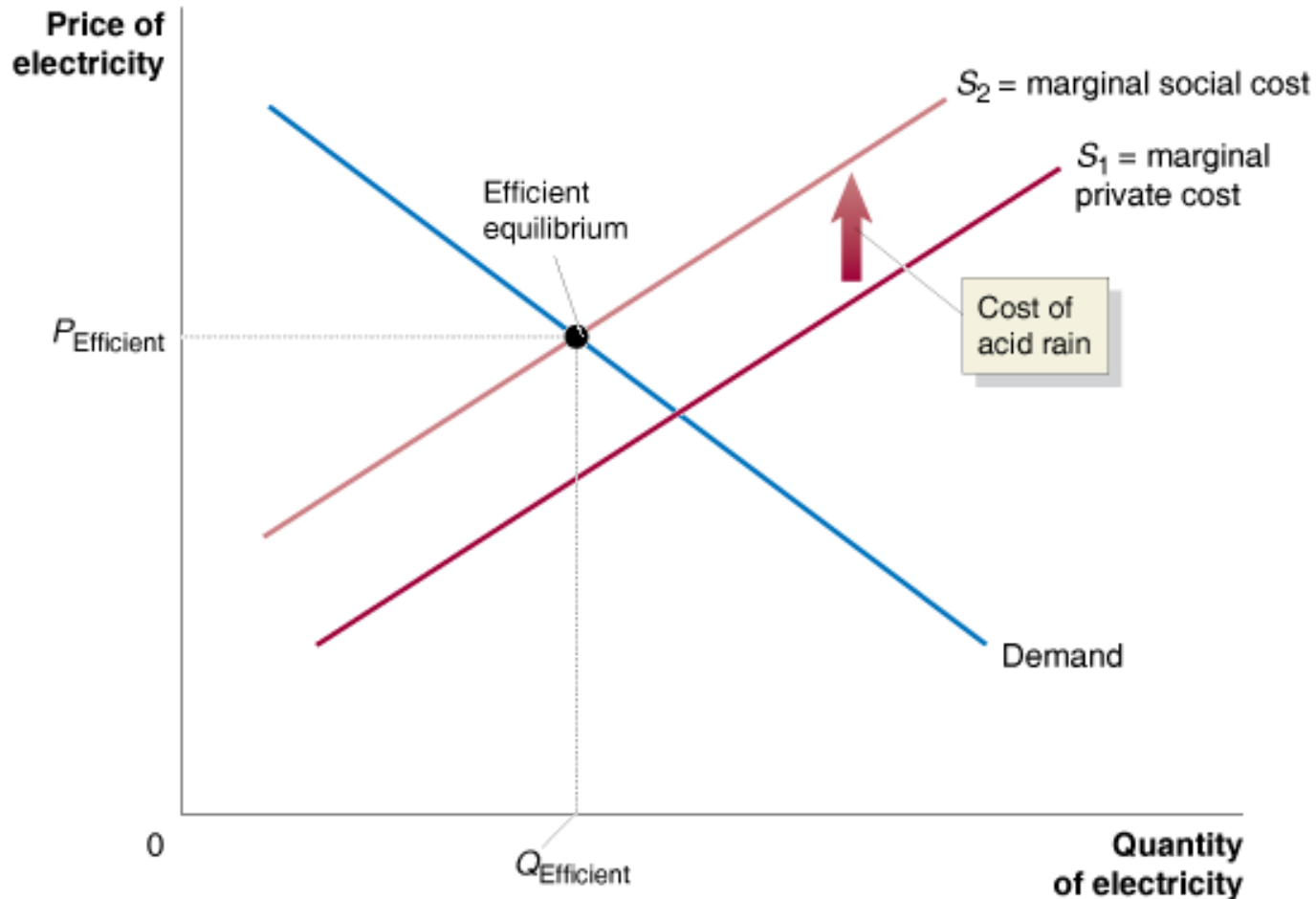
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Cost of electricity production

When firms produce electricity, they bear certain costs of production:

- Buildings
- Equipment
- Fuel
- Labor, etc.

Those firms make their decisions about how much to produce based on these private costs. However, the social cost is higher.
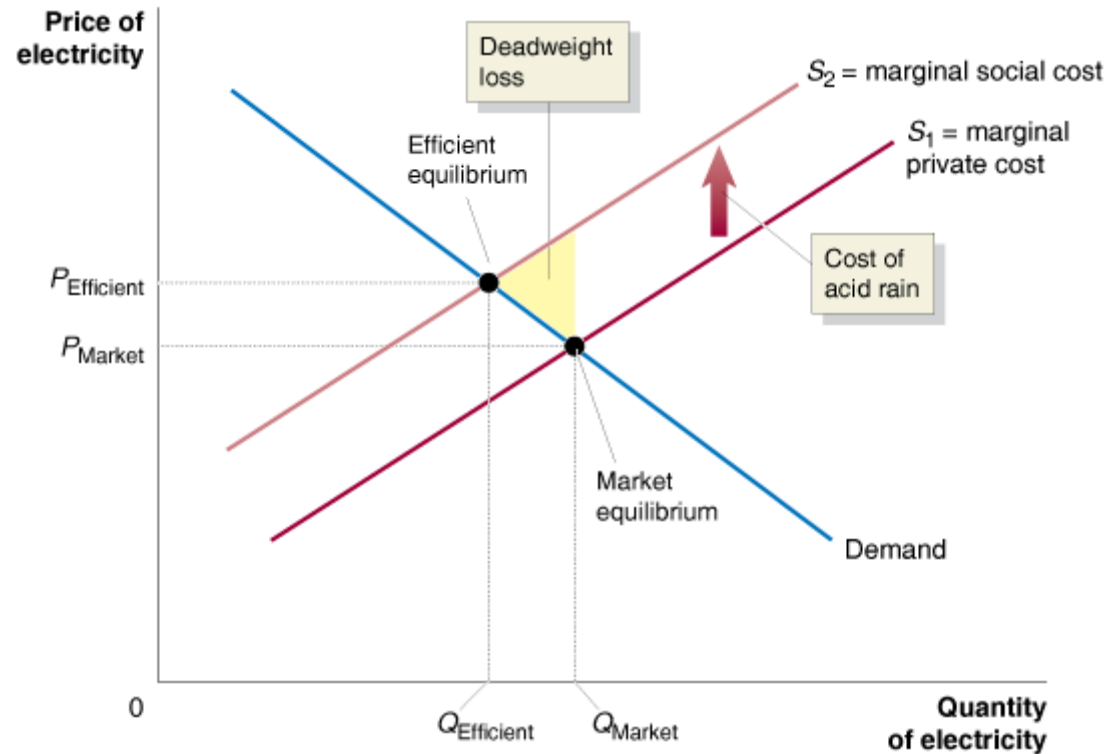
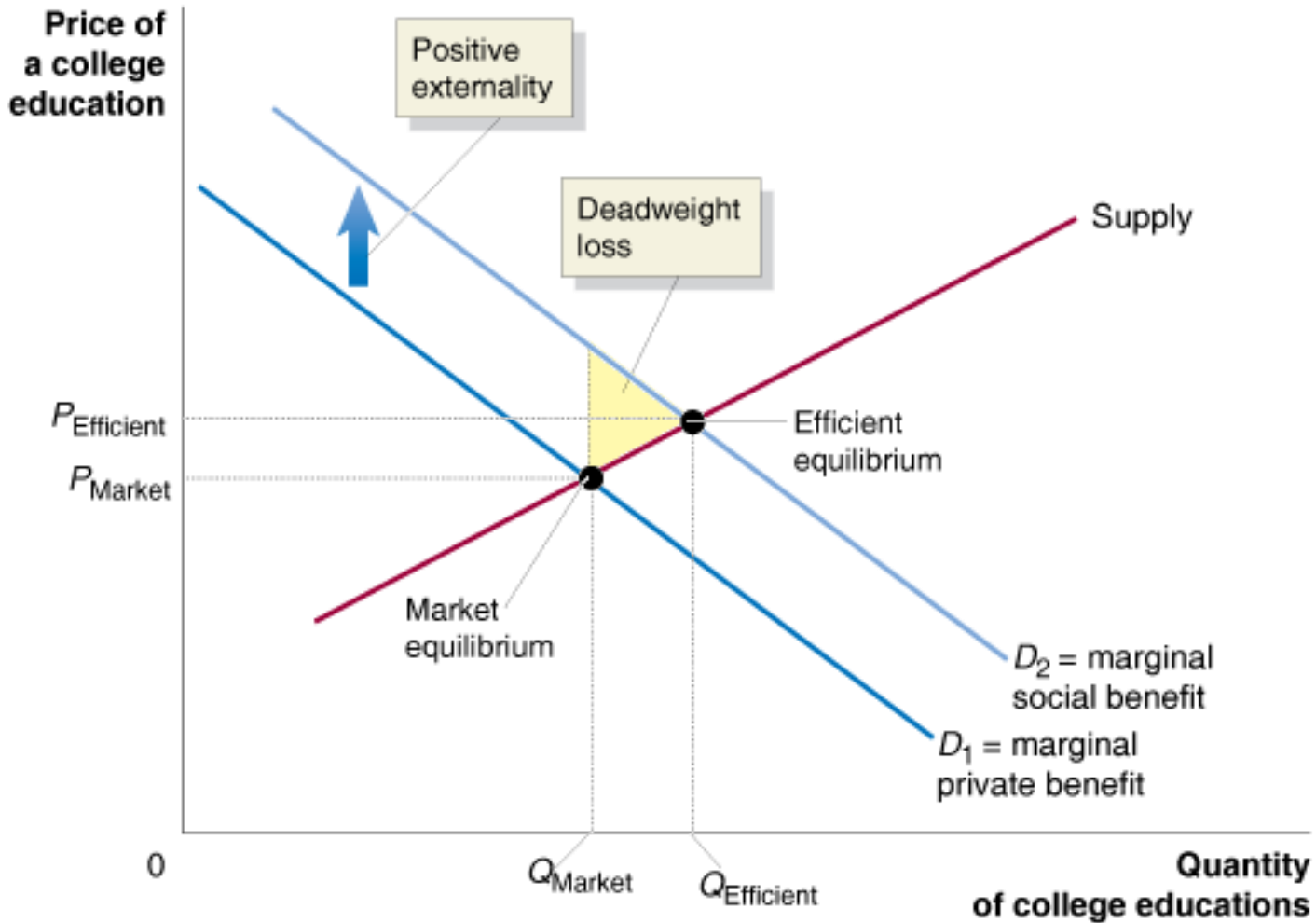# Figure 5.1 The effect of pollution on economic efficiency

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Figure 5.1 The effect of pollution on economic efficiency

When there is a negative externality in producing or consuming a good or service, too much of the good or service will be produced at market equilibrium.
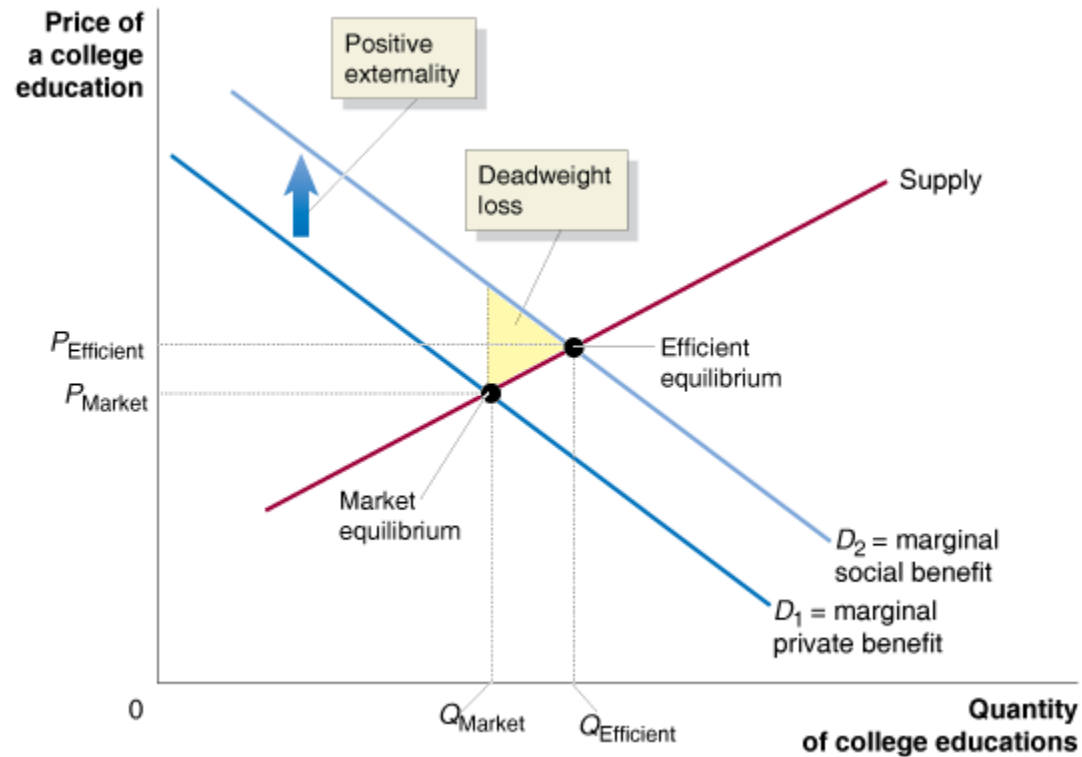
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Figure 5.2 The effect of a positive externality on economic efficiency

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Figure 5.2 The effect of a positive externality on economic efficiency

When there is a positive externality in producing or consuming a good or service, too little of the good or service will be produced at market equilibrium.

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# Government Policies to Deal with Externalities

◆ Tax

◆ Subsidies

◆ Command-and-control (self-study)

◆ Cap-and-trade (self-study)

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When there is a negative externality, a tax can lead to the efficient level of output.

Utilities do not bear the cost of pollution, so they produce too much.

If the government imposes a tax equal to the cost of the pollution, the utilities will internalize the externality.

- The supply curve will shift up, from S_1 to S_2.

- The market equilibrium quantity falls to the economically efficient level.

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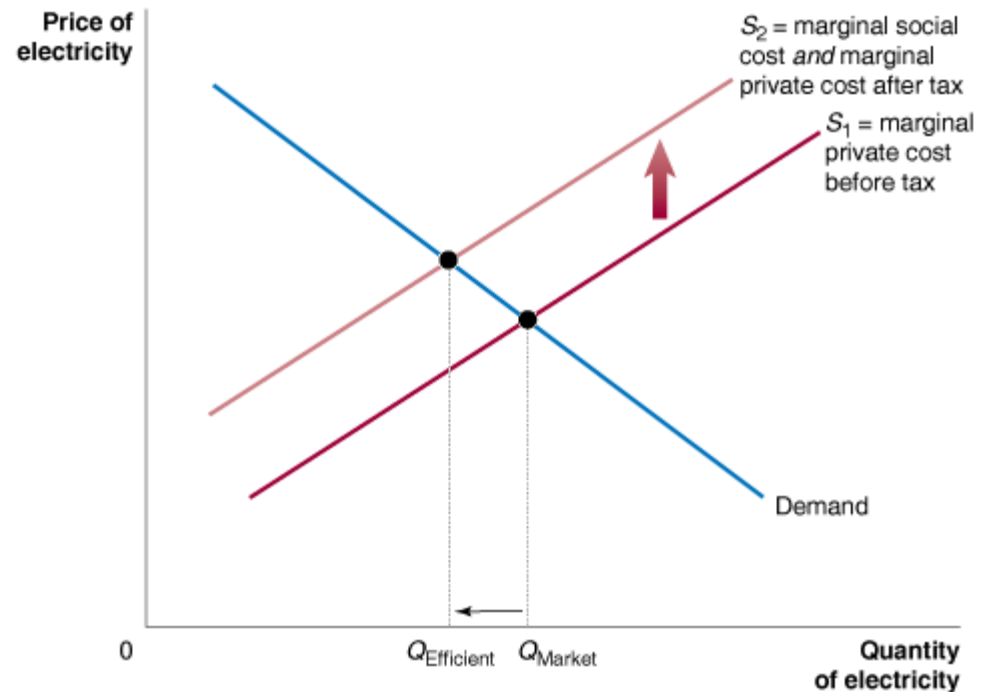
The price of electricity will rise from P_{Market}, which does not include the cost of acid rain, to $P_{Efficient}$, which does include the cost.

Consumers pay the price $P_{Efficient}$, while producers receive a price P, which is equal to $P_{Efficient}$ minus the amount of the tax.

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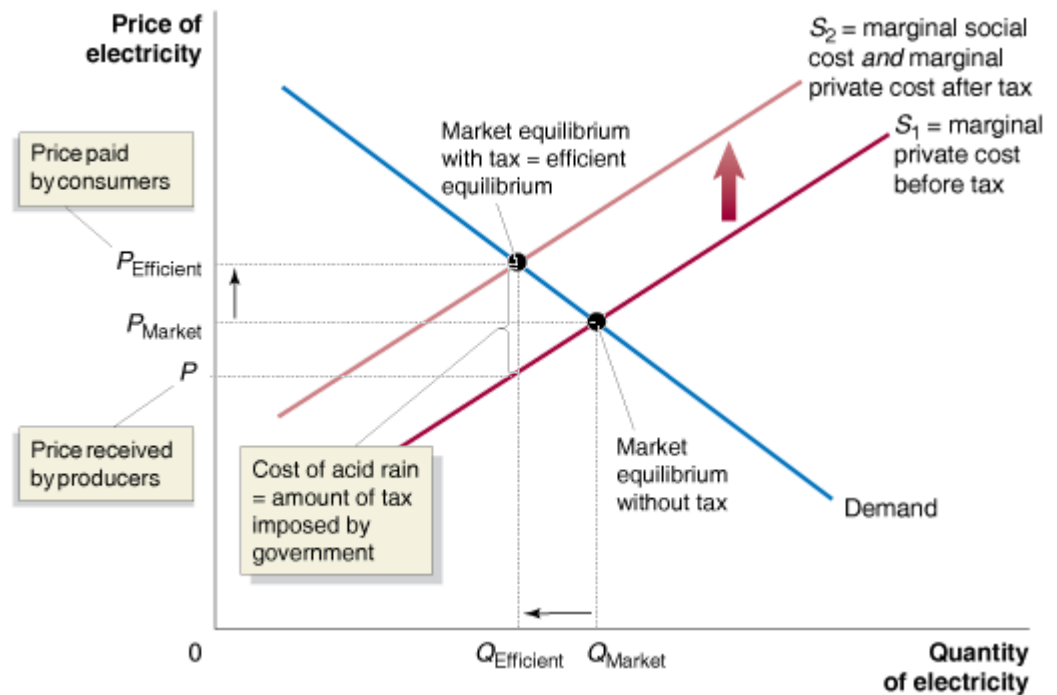
Question: Can taxes solve positive externalities?
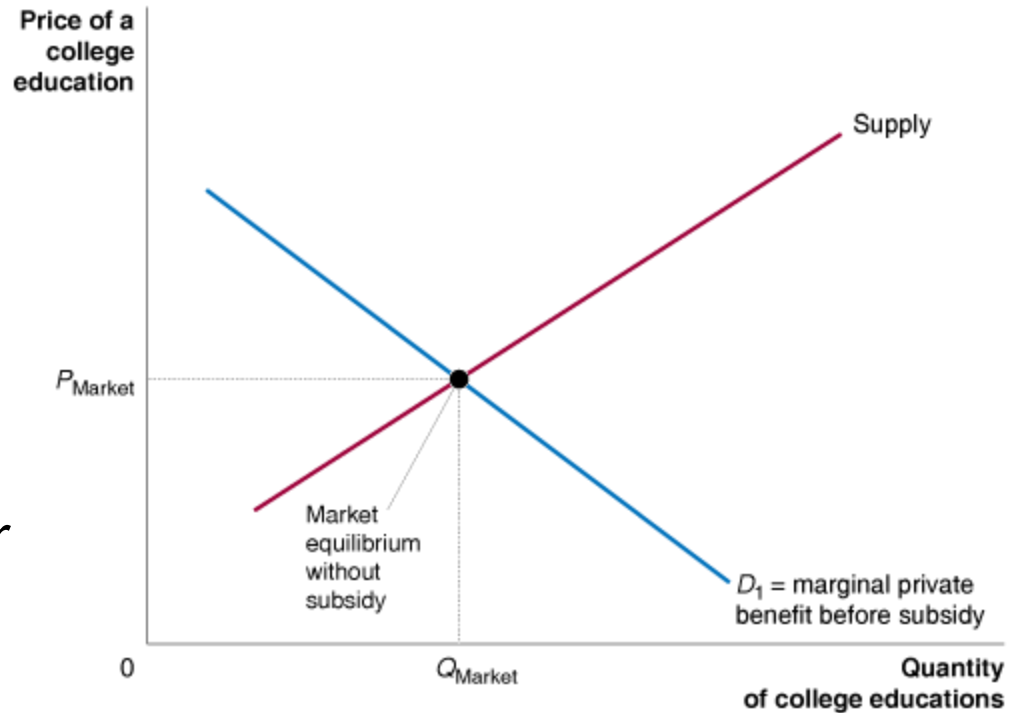
Discussion

Subsidy: An amount paid to producers or consumers to encourage the production or consumption of a good.

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When there is a positive externality, a subsidy can bring about the efficient level of output.

Individuals make decisions about whether or not to "consume" a college education, with a resulting market price and quantity.

But what if there are positive externalities to a college education?

- It is good for us all if *other people* are smart and make good decisions.

- This is an argument for a subsidy in the market for college education.

Price of a college education

Supply

P_{Market}

Market equilibrium without subsidy

D_1 = marginal private benefit before subsidy

0   Q_{Market}

Quantity of college educations

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The subsidy will cause the demand curve to shift up, from D_1 to D_2.

The market equilibrium quantity will shift from Q_{Market} to $Q_{Efficient}$, the economically efficient equilibrium quantity.

Producers receive the price $P_{Efficient}$, while consumers pay a price P, which is equal to $P_{Efficient}$ minus the amount of the subsidy.

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