

Externalities and Property Rights

CHAPTER
11

External Costs and Benefits

- External Cost (negative externality)
 - A cost of an activity that falls on people other than those who pursue the activity
- External Benefit (positive externality)
 - A benefit of an activity received by people other than those who pursue the activity

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External Costs and Benefits

- Externalities reduce economic efficiency.
- Solutions of externalities may be efficient.

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External Costs and Benefits

- When efficient solutions to externalities are not possible, government intervention or other collective action may be used.

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External Costs and Benefits

- How Externalities Affect Resource Allocation
 - Does the honeybee keeper face the right incentives? (Part I)
 - ◆ Bees pollinate the apple orchards.
 - ◆ The honeybee keeper may not consider the external benefit to the apple growers when considering the optimal number of hives.

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External Costs and Benefits

- How Externalities Affect Resource Allocation
 - Does the honeybee keeper face the right incentives? (Part I)
 - ◆ If the external benefit is not considered, the bee keeper's optimal number of hives will be less than the socially optimal number of hives.

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External Costs and Benefits

- How Externalities Affect Resource Allocation
 - Does the honeybee keeper face the right incentives? (Part II)
 - ◆ If the hives are located near a school and nursing home, additional hives will cause more people to get stung by the bees.
 - ◆ For the students and nursing home residents, the bee hives create an external cost.

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External Costs and Benefits

- How Externalities Affect Resource Allocation
 - Does the honeybee keeper face the right incentives? (Part II)
 - ◆ If the external costs are not considered, the optimal number of hives for the beekeeper will be greater than the socially optimal number of hives.

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External Costs and Benefits

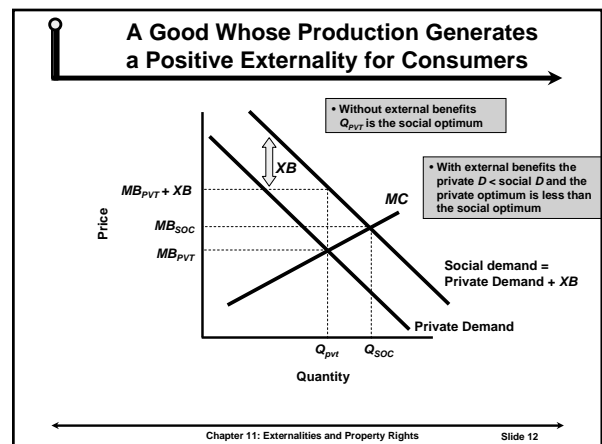
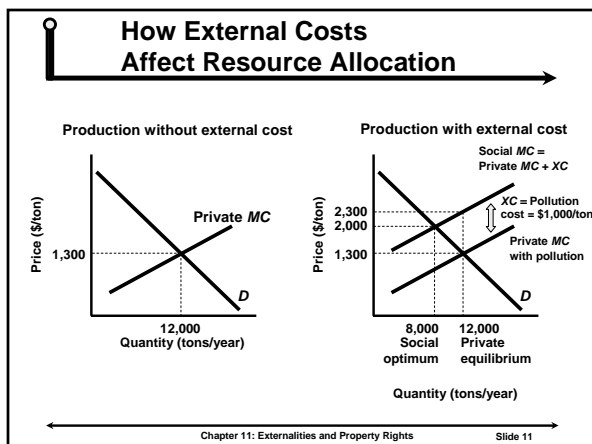
- How Externalities Affect Resource Allocation
 - When an activity does not create an externality, the optimal level of the activity for the individual will equal the socially optimal level of the activity.

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External Costs and Benefits

- When an activity generates a negative externality, the level of the activity will be greater than the socially optimal level.
- When an activity generates a positive externality, the level of the activity will be less than the socially optimal level.

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External Costs and Benefits

- When a market leaves cash on table there is usually a response to capture the unrealized value.
 - Need well defined property rights

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External Costs and Benefits

- River Pollution Abe's company produces a toxic waste.
 - If the waste is dumped into the river, Fitch cannot fish the river.
 - Will Abe dump toxins in the river?
 - Should Abe install a filter?

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External Costs and Benefits

- River Pollution
 - The Market
 - ◆ There is no communication between Abe and Fitch
 - ◆ Abe can legally pollute the river
 - What if Abe and Fitch can communicate?
 - What if Abe cannot legally pollute the river without Fitch's consent?

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Costs and Benefits of Eliminating Toxic Waste (Part 1)

	With filter	Without filter
Gains to Abe	\$100/day	\$130/day
Gains to Fitch	\$100/day	\$50/day

The Market (no communication)
 •Without filter: Total Gains = \$130 + \$50 = \$180
 •With filter: Total Gains = \$100 + \$100 = \$200
 •MC of the filter = \$30 & MB of the filter = \$50
 •Loss in economic surplus = \$20

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Costs and Benefits of Eliminating Toxic Waste (Part 2)

	With filter	Without filter
Gains to Abe	\$100/day	\$130/day
Gains to Fitch	\$100/day	\$50/day

Assume Fitch and Abe can communicate at no cost
 •Fitch offers Abe \$40 to use the filter
 •Economic surplus increases by \$20

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External Costs and Benefits

- The Coase Theorem
 - If at no cost people can negotiate the purchase and sale of the right to perform activities that cause externalities, they can always arrive at efficient solutions to problems caused by externalities.

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External Costs and Benefits

- Question
 - Why should Fitch pay Abercrombie to filter out toxins that would not be there in the first place if not for Abercrombie's factory?

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Costs and Benefits of Eliminating Toxic Waste (Part 3)

	With filter	Without filter
Gains to Abercrombie	\$100/day	\$150/day
Gains to Fitch	\$100/day	\$70/day

- Economic surplus = \$200 w/filter & \$220 w/o filter
- Fitch would gain \$30 with the filter but the outcome is inefficient
- Abe pays Fitch \$40 to operate without the filter
- Economic surplus = \$110 + \$110 = \$220 & both gain \$10
- Allowing pollution increases economic surplus

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External Costs and Benefits

- When polluters are liable:
 - Polluter's income is lowered.
 - Those injured by pollution will have higher income.
 - Does not always stop pollution

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The Gain in Surplus from Shared Living Arrangements

Will Ann and Betty Share an apartment?

Benefits of Shared Living		
Total cost of separate apartments	Total cost of shared apartment	Rent savings From sharing
(2)(\$400/month) = \$800/month	\$600/month	\$200/month

Costs of Shared Living			
Problem	Ann's cost of solving problem	Betty's cost of solving problem	Least costly solution to the problem
Ann's phone usage	Curtailed phone usage: \$250/mo.	Tolerate phone usage: \$150/mo.	Betty tolerates Ann's phone usage: \$150/mo.

Rent savings (\$200/month)	-	Least costly accommodation to shared living problems (\$150/month)	=	Gain in surplus \$50/month
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The Gain in Surplus from Shared Living Arrangements

How much should Ann and Betty pay if they agree to split their economic surplus equally?

Benefits of Shared Living		
Total cost of separate apartments	Total cost of shared apartment	Rent savings From sharing
(2)(\$400/month) = \$800/month	\$600/month	\$200/month

Costs of Shared Living			
Problem	Ann's cost of solving problem	Betty's cost of solving problem	Least costly solution to the problem
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External Costs and Benefits

- Legal Remedies for Externalities
 - When negotiation is costless:
 - ◆ Efficient solutions to externalities can be found.
 - ◆ The adjustment to the externality is usually done by the party with the lowest cost.

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External Costs and Benefits

- Legal Remedies for Externalities
 - When negotiation is not costless:
 - ◆ Laws may be used to correct for externalities.
 - ◆ The burden of the law can be placed on those who have the lowest cost.

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External Costs and Benefits

■ Economic Naturalist

- Why do many governments enact laws that limit the discharge of environmental pollutants?

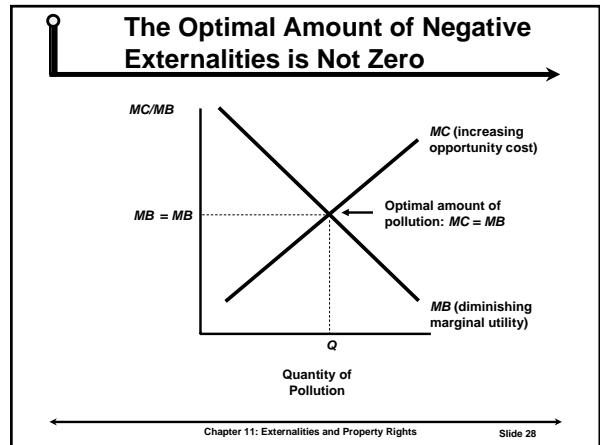
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External Costs and Benefits

■ Economic Naturalist

- Why does government subsidize the planting of trees on hillsides?

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Property Rights and the Tragedy of Commons

- The Problem of Unpriced Resources
 - When no one owns property (the commons), the opportunity cost of using it is not considered.
 - Use of the property (the commons) will increase until $MB = 0$.

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Property Rights and the Tragedy of Commons

- One person's use of the commons imposes an external cost on the others by making the property less valuable.

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Property Rights and the Tragedy of Commons

- The Effect of Private Ownership
 - When the right to control the commons is auctioned, the highest bidder will have an incentive to consider the opportunity cost of additional use.
 - Common property is not used efficiently.
 - Need ability to exclude use by others.

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Property Rights and the Tragedy of Commons

- Private ownership may be impractical.

📁 Economic Naturalist

- Why do blackberries in public parks get picked too soon?
- Why are shared milkshakes consumed too quickly?

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Positional Externalities

- When Payoffs Depend on Relative Performance
 - In a competitive situation:
 - ◆ There is an incentive to take an action to increase the odds of winning.
 - ◆ The overall gain to the players as a group will be zero.

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Positional Externalities

- When Payoffs Depend on Relative Performance
 - In a competitive situation:
 - ◆ When the payoff depends on relative performance, incentive to invest in performance activities will be excessive from a collective point of view.

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Positional Externalities

📁 Economic Naturalist

- Why do football players take anabolic steroids?
 - ◆ Smith and Jones are competing for a single position and a \$1 million contract.

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Payoff Matrix for Steroid Consumption

		Jones	
		Don't take steroids	Take steroids
Smith	Don't take steroids	Each has 50% chance of winning	Jones Wins
	Take steroids	Smith Wins	Each has a 50% chance of winning

- Dominant strategy for each yields the third best outcome
- This prisoner's dilemma outcome is solved by banning performance enhancing drugs.

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Positional Externalities

- Positional Externality
 - When an increase in one person's performance reduces the expected reward of another in situations in which reward depends on relative performance

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Positional Externalities

📁 Economic Naturalist

- Why do grocery stores stay open all night, even in small towns?

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Positional Externalities

📁 Economic Naturalist

- Two stores considering whether or not to stay open until 1:00 a.m.

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Payoff Matrix for Extended Shopping Hours

		Wegmans	
		Close at midnight	Close at 1:00 A.M.
Tops	Close at midnight	Second best for each	Best for Wegmans Worst for Tops
	Close at 1:00 A.M.	Best for Tops Worst for Wegmans	Third best for each

- Customers will choose the store with the most convenient hours, assuming all other variables are the same
- Both stores will stay open
- Why will they stay open 24 hours?
- Could a local law solve their problem?

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Positional Externalities

- Positional Arms Race
 - A series of mutually offsetting investments in performance enhancement that is stimulated by a positional externality?
- Positional Arms Control Agreements
 - An agreement in which contestants attempt to limit mutually offsetting investments in performance enhancements

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Positional Externalities

- Positional Arms Control Agreements
 - Campaign spending limits
 - School uniforms
- Social Norms as Positional Arms Control Agreements
 - Norms against excessive vanity

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