

|              |           |                |
|--------------|-----------|----------------|
| Mon 4-4:50   | PETER 103 | Vinayak Alladi |
| Mon 10-10:50 | WLH 2204  | Matthew Louie  |
| Wed 3-3:50   | CENTR 222 | Roy Allen      |
| Wed 5-5:50   | PETER 103 | Martha Gimbel  |
| Fri 4-4:50   | PETER 103 | Soojin Jo      |
| Fri 5-5:50   | PETER 103 | Ayal Chen-Zion |

(1) Exams returned in discussion section beginning today.  
(2) Check course web page on Saturday for information about grading scale <http://dss.ucsd.edu/~jhamilto/Econ2.html>

## Chapter 11: Externalities and Property Rights

A. External costs  
B. External benefits

A socially efficient allocation calls for setting marginal social benefit = marginal social cost

- If social MB > social MC, should have more of activity
- If social MB < social MC, should have less of activity

- With perfect competition and no externalities, social MC = private MC and social MB = private MB
- This is why perfect competition with no externalities results in socially efficient allocation (= Adam Smith's "invisible hand")

## Chapter 11: Externalities and Property Rights

A. External costs  
B. External benefits  
C. Negotiation and the Coase Theorem  
    1. Negotiation and negative externalities

### Abercrombie the Polluter – Scenario 1

- Abercrombie's company dumps toxic waste in the river
  - Fitch cannot fish the river
  - No one else is harmed
- Abercrombie could install a filter to remove the harm to Fitch
  - Filter imposes costs on Abercrombie
  - Filter benefits Fitch
- Parties do not communicate or negotiate

LO 11 - 2 11-6

### Abercrombie's Filter Options

|                     | With Filter | Without Filter |
|---------------------|-------------|----------------|
| Abercrombie's Gains | \$100 / day | \$130 / day    |
| Fitch's Gains       | \$100 / day | \$50 / day     |
| Total Gains         | \$200 / day | \$180 / day    |

- Abercrombie does not install the filter
  - Marginal cost of filter to Abercrombie is \$30 per day
  - The marginal benefit to Fitch is \$50 per day
- There is a net welfare loss of \$20 per day

LO 11 - 2

11-7

### Abercrombie the Polluter – Scenario 2

- Negotiation changes the outcome
  - Suppose Fitch pays Abercrombie \$40 per day to use the filter
  - With filter, Abercrombie pays \$30 for filter but gets \$40 from Fitch, better off by \$10
  - With filter, Fitch pays \$40 to Abercrombie but gets \$50 more fish, better off by \$10

LO 11 - 2

11-8

### Abercrombie the Polluter – Scenario 2

- Negotiation changes the outcome

|                     | With Filter | Without Filter |
|---------------------|-------------|----------------|
| Abercrombie's Gains | \$140 / day | \$130 / day    |
| Fitch's Gains       | \$60 / day  | \$50 / day     |
| Total Gains         | \$200 / day | \$180 / day    |

LO 11 - 2

11-9

### Coase Theorem:

If people can negotiate with each other at no cost for side payments for externalities, the socially efficient outcome would emerge



Ronald Coase

### The Coase Theorem

- Negotiations must be costless
- Sometimes those harmed pay to stop pollution (as in Scenario 2)
- Can also set up the law so that the polluter ends up bearing the cost (Scenario 3)

LO 11 - 2

11-11

### Abercrombie the Polluter – Scenario 3

- Abercrombie's company produces toxic waste
  - Suppose laws prohibit dumping the waste in the river UNLESS Fitch agrees
  - Without filter, Abercrombie must pay Fitch \$50 before he would agree, so its income would be  $\$130 - \$50 = \$80$
  - With filter, Abercrombie does not need to pay Fitch, so only pays \$30 cost of filter and income is  $\$130 - \$30 = \$100$
  - Result: Abercrombie would choose to use filter in such a system

LO 11 - 2

11-12

### Abercrombie the Polluter – Scenario 3

- Outcome when law says Fitch must agree (Scenario 3)

|                     | With Filter | Without Filter |
|---------------------|-------------|----------------|
| Abercrombie's Gains | \$100 / day | \$80 / day     |
| Fitch's Gains       | \$100 / day | \$100 / day    |
| Total Gains         | \$200 / day | \$180 / day    |

LO 11-2

11-13

### Abercrombie the Polluter – Scenario 3

- Conclusion: the efficient outcome emerges if either
  - (1) The law says nothing, so Fitch must convince Abercrombie not to pollute
  - (2) The law requires Abercrombie to get Fitch to agree that Abercrombie can pollute
- But Abercrombie is better off under (1), while Fitch is better off under (2)

LO 11-2

11-14

- Outcome when law gives Abercrombie the right to pollute (Scenario 2)

|                     | With Filter | Without Filter |
|---------------------|-------------|----------------|
| Abercrombie's Gains | \$140 / day | \$130 / day    |
| Fitch's Gains       | \$60 / day  | \$50 / day     |
| Total Gains         | \$200 / day | \$180 / day    |

LO 11-2

11-15

### Abercrombie the Polluter – Scenario 3

- Outcome when law says Fitch must agree (Scenario 3)

|                     | With Filter | Without Filter |
|---------------------|-------------|----------------|
| Abercrombie's Gains | \$100 / day | \$80 / day     |
| Fitch's Gains       | \$100 / day | \$100 / day    |
| Total Gains         | \$200 / day | \$180 / day    |

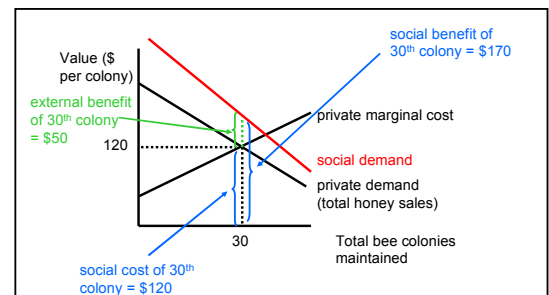
LO 11-2

11-16

## Chapter 11: Externalities and Property Rights

- External costs
- External benefits
- Negotiation and the Coase Theorem
  - Negotiation and negative externalities
  - Negotiation and positive externalities

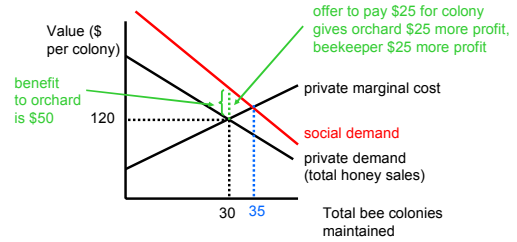
If beekeepers were not compensated for pollination services, the private outcome would be inefficient



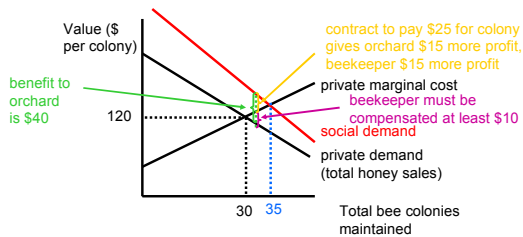
- Owner of apple orchard would gain \$50 if beekeeper located another colony next to orchard.
- So why not offer to pay beekeeper \$25?



At any number of colonies less than 35, there is a contract that would make both orchard owner and beekeeper better off



At any number of colonies less than 35, there is a contract that would make both orchard owner and beekeeper better off



- Both orchard owner and beekeeper would be better off
- So why don't they make such arrangements?



Answer: they do!



- When such contracts are written, the "external" costs or benefits become private costs or benefits



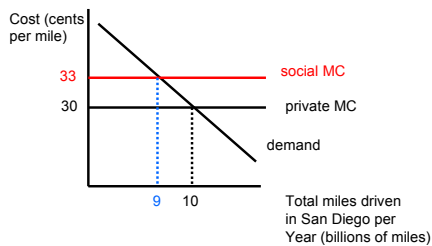
But for some kinds of externalities, such contracts are not feasible



## Chapter 11: Externalities and Property Rights

- A. External costs
- B. External benefits
- C. Negotiation and the Coase Theorem
- D. Using taxes to internalize negative externalities

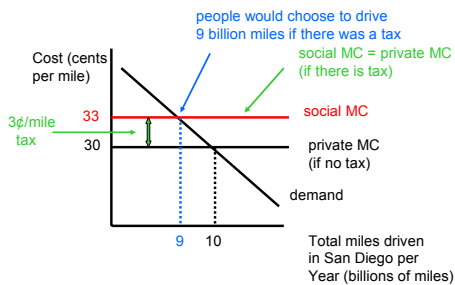
Premise: the optimal amount of negative externalities is not zero



Suppose we put a tax of 3 cents per mile for every mile driven.

Then the marginal private cost of driving an extra mile would be 33 cents rather than 30 cents.

Using a tax to correct a negative externality



Taxes discourage any economic activity.

- If there are no externalities, this would be a bad thing.
- If there are negative externalities, this could be a good thing.

Problem 1: The contribution to traffic congestion differs with time of day.

At midnight, marginal congestion cost = 0.

Solution: set a toll for use of the road that differs with time of day.

Problem 2: Different cars cause different levels of pollution.

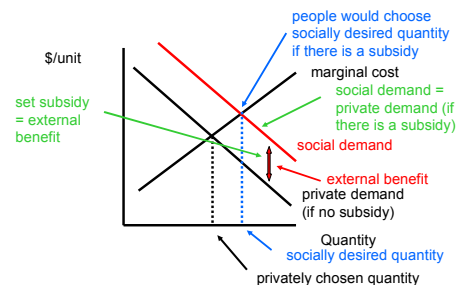
Older cars cause much more pollution than new.

Solution: base tax on features of car.

## Chapter 11: Externalities and Property Rights

- A. External costs
- B. External benefits
- C. Negotiation and the Coase Theorem
- D. Using taxes to internalize negative externalities
- E. Using subsidies to internalize positive externalities

## Using a subsidy to correct a positive externality



Subsidies encourage an economic activity.

If the right amount of the activity is already being undertaken by private market, this would be a bad thing (cost to taxpayers exceeds benefit to consumers and producers).

If too little of the activity is being undertaken by private market, this would be a good thing.

Examples of potentially useful subsidies:

(1) Recycling aluminum cans

private benefit: economic value of aluminum

external benefit: reduce burden on landfills

cash redemption value: increases private benefit of recycling

(2) Public transportation

private benefit: save gas, car costs

external benefit: reduce traffic congestion,  
pollution, cost of new roads

government subsidy: decreases cost to user  
of public transportation