**Negative Externalities**

Production Consumption

SMC

P

P

SMC

PMC

PMB

Q’

Q\*

SMB

Q

SMB

Q’

Q\*

Q

Solution to negative externalities problem

Ways to move to efficient output

**1. Regulation (command and control)**

Predominant method used to control externalities

Production examples:

A. 1970’s Clean Air Act

Mandated new plants in polluted areas had to use emissions technology to achieve lowest emissions rates

B. CFC’s, which depleted ozone layer, have been largely banned worldwide

C. California mandated that 10% of autos sold in the state must be zero emission by 2003.

Consumption examples:

A. Ban on indoor smoking

B. Ban on leaded gas

Positive/Negative of regulation

Positive

a. Clear rules that may be hard to avoid by cheating

b. Rules may spur innovation (California mandate for cars)

Negative

Regulations may not explicitly consider economic costs

**2. Corrective Tax**

On the production side:

SMC = PMC + MD

A per unit tax equal to MD could induce firms to recognize costs

Industry supply would be

= PMC + t where t is per unit tax equal to MD

= SMC

If t = MD total tax revenue would equal total external cost

Steel firms could be charged tax equal to economic cost of dead fish

Revenue could be used to compensate damaged parties

Example of corrective tax on consumption:

Gas tax per gallon in California: 18 cents state

21 cents local

18 cents federal

Positive/Negative of corrective taxes

Positive

Incorporates economic incentives

Changes marginal costs of economic decisions

Negative

1. May be Difficult to determine appropriate tax level

2. May be imprecise instrument to address consumption externalities (example second hand smoke)

**3. Market Solution**

The dead fish in steel example is considered externality because fishermen (and by extension consumers) claimed right to the river

Externality can be thought of as conflict in property rights

Various groups used same resource

Suppose fishermen owned the river:

Steel companies couldn’t legally dump sludge on private property

Fishermen could force elimination of all emission (sludge) – although this solution may be inefficient

Steel firms could possibly negotiate with fishermen on use of river

Suppose river owned by steel firm

Possible terms of negotiation…

**Coase Theorem:**

With well-defined property rights and costless bargaining, negotiation between parties may bring about social efficiency

P

SMC

fishermen estimate that for every ton of steel produced,

$100 in fish is killed - MD = $100

MD=$100

PMC

B

A

they may agree to be compensated $100 (or more) for

D=PMB=SMB

every ton of steel produced

Q

QA

QB

this agreement will internalize the externality

steel producers’ cost rise by $100 for each ton of steel produced

Industry supply effectively moves from PMC curve to SMC

The efficient equilibrium point B is the same point that a $100 tax would have resulted in

Suppose property rights given to the steel producing firms

Negotiating may also lead to efficient point

Positive/Negative of Market Solution

Positive

Efficiency may be reached without coercive action from government

Outcome from bargaining may be mutually beneficial

Negative

Market solution may be difficult to achieve, primarily if there is a large number of users of common resource

a. may be difficult to assign property rights

b. may be difficult for users on either side to coordinate interests

(apply theorem: smoking, noise in condo complex)