**Negative Externalities**

Example: paper production

Market achieves efficient solution if all costs of producing paper borne by producer

The production of paper may generate some costs to society producer doesn’t consider

Social Costs = private costs + external (environmental) costs

Social costs may be greater than private costs

Example of [Salmon Industry in Maine](http://milesfinney.net/334/articles/paper.html)

Cost of dead fish is external cost

Cost to society but not to individual paper firms

Market for Paper

P

MPC

P\*=3.00

D=MPB=MSB

Q=25

Quantity (1000 packs per month)

Industry supply is only MPC

Marginal Social Costs (MSC) = Private Marginal Costs MPC) + Marginal External Cost (MEC)

MSC=MPC+MEC

Suppose MEC=$2 interpret

At market equilibrium of Q=25

MSC=MPC+MEC

= $5

Opportunity cost to society for last pack of paper produced is $5

At Q=25 MSB=3

Value of the marginal pack to society is $3.

For marginal transaction MSC>MSB

MSC=MPC+MEC

P

P=5.00

MPC

P\*

P=3.00

D=MPB=MSB

Q\*

Q= 25

“Too much” paper is being produced

At *correct,* efficient allocation, MSB=MSC at Q\*

At Q\*, amount the marginal purchaser paid for paper covered both MPC and MEC

There is still some external costs (dead fish) but cost are accounted for

Consumers in the market are paying for all costs, including the dead fish

Correct Cost/benefit calculation made between competing values: fish and paper

Correct tradeoff is made

What if value of fish increases? Decreases?

Problems surrounding Public Policy charged with moving to efficient quantity

**Externality Arising from Consumption**

Negative external effects may also arise from the decisions of consumers

**Example of automobiles**

What expenditures do consumers bear when they make decision to use car to travel somewhere?

a. gas

b. wear and tear of car

Market demand for auto transportation can be reflected marginal willingness to pay per mile

Demand for travel by auto in US

Price per mile

MPB

a

.30

b

.2520

200

220

Q billions of miles /per month

Q above is number of miles traveled by auto in the US per month

From diagram above, if the price per mile using car is .30 then 200 billion miles will be traveled

The social benefit of auto use may be less than the private benefit

Social Benefit = Private Benefit – external cost of consumption

Dollar estimates of external costs per mile taken from [Automobile Externalities and Policies](http://milesfinney.net/334/articles/auto_externalities_and_policies.pdf).

Source of Cost Cents/mile

Greenhouse Gas Emissions 0.3

Local Air Pollution 2.0

Congestion 5.0

Accidents 3.0

(over 6 million car crashes reported in 2014; 28% involved injury; approximately 32,000 people died)

Oil Dependency 0.6

Total 10.9

The social benefit per mile traveled is less than the private benefit due to external costs of using auto

MSB<MPB

P

a

.30

a’

.2520

b

b’

.1920

.1420

MPB

MSB

220

200

Q billions of miles /per month

|  |  |  |
| --- | --- | --- |
| Total Miles/billions | Marginal Private Benefit (MPB) | Marginal Social Benefit (MSB) |
| 200 | .30 | .19 |
| 220 | .25 | .14 |

The marginal cost to society of providing automobile transportation would represent the scarce resources used to manufacture cars, roads and refine gasoline. Suppose MSC is constant at 19 cents per mile.

P

e

e’

MSC=.19

Q\*

(200)

MPB

MSB

Q’

(242)

Q billions of miles /per month

1. What amount of driving is socially efficient?

2. Identify the marginal condition that holds at the socially efficient point?

3. Do traffic accidents still exist at the efficient level of auto travel?

4. Does some local air pollution still exist at the socially efficient level of auto travel?