externalities

notion and types consumption externalities example quasilinear preferences and the Coase theorem production externalities example mergers, Pigouvian taxes/subsidies, tradeable licenses

externalities

- definition: an agent's action directly affect the welfare of another agent (directly=not through prices)
- linked to absence of markets
- positive or negative
- production or consumption
- assumptions of First Welfare Theorem fail: equilibrium may not lead to efficiency

consumption externalities

- example: smokers and nonsmokers



consumption externalities

- quasilinear preferences and the Coase theorem



consumption externalities

- as long as property rights are well defined, trade can lead to an efficient level of externalities (as long as there are no transaction costs)
- if preferences are quasilinear, the efficient amount of a consumption externality will be independent of the assignment of property rights

- example: steel firm generates pollution that negatively affects fishery
- steel firm:

-fishery -fishery $max p_s s - c_s(s,x)$ s,x $max p_f f - c_f(f,x)$. f-assume c_s decreasing in x, c_f increasing in x

- steel firm:

 $p_s = dc_s(s^0, x^0)/ds$ $0 = dc_s(s^0, x^0)/dx$

-fishery

 $p_f = dc_f(f^0, x^0)/df$

- external cost being ignored by steel firm

- merger: max $p_s s - c_s(s,x) + p_f f - c_f(f,x)$ s,x,f $p_s - dc_f(f,x) = dc_f(f,x) + dc_f(f,x)$

$$p_s = dc_s(s^*, x^*)/ds$$

 $p_f = dc_f(f^*, x^*)/df$
 $-dc_f(f^*, x^*)/dx = dc_s(s^*, x^*)/dx$

- $dc_{f}(f^{*},x^{*})/dx + dc_{s}(s^{*},x^{*})/dx = 0$
- social marginal cost being considered!



- Pigouvian tax: $t=dc_f(f^*,x^*)/dx$ max $p_ss=c_s(s,x)-tx$ s,x $p_s=dc_s(s^*,x^*)/ds$

$$P_s dc_s(s^*,x^*)/ds = t (= dc_f(f^*,x^*)/dx)$$

- $dc_f(f^*,x^*)/dx + dc_s(s^*,x^*)/dx = 0$ -social marginal cost being considered!

-problem: information...

- creating a market for pollution with q as unit price - x: t=dc_f(f*,x*)/dx max p_ss-c_s(s,x)-qx s,x $m = d_{2} (a^{*} m^{*})/d_{2}$

$$p_s = dc_s(s^*, x^*)/ds$$

- $dc_s(s^*, x^*)/dx = q (= dc_f(f^*, x^*)/dx)$

$$\max p_{f} f^{-c}(f,x) + qx.$$

f,x
$$p_{f} = dc_{f}(f^{*},x^{*})/df$$
$$dc_{f}(f^{*},x^{*})/dx = q$$

- creating a market for pollution with q as unit price
- at the equilibrium, $dc_f(f^*,x^*)/dx + dc_s(s^*,x^*)/dx = 0$
- social marginal cost being considered!

- different property rights leads to same conclusions: max $p_s s - c_s(s,x) + q(X-x) = p_s s - c_s(s,x) - qx + qX$ s,x max $p_f f - c_f(f,x) - q(X-x) = p_f f - c_f(f,x) + qx - qX$ f,x