

Industrial Economics

Sustainable development and corporate strategies

Andras Niedermayer



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- We present the first principle of optimal internalization which includes equalization of marginal social costs with marginal costs of control, and then how to measure social costs.
- Finally, we will talk about economic efficiency and implications for the distribution of wealth different instruments to achieve “optimal” solutions.



- Imagine a chemical firm, which in a situation without constraints, would create air pollution.
- This pollution would create social costs in terms of public health, nuisance or decrease the recreational value of the surrounding nature.
- The environment or atmosphere with no prices, pollution is not taken into account by the managers of the firm not by bad faith or negligence.
- But pollution control is expensive.
- And to incur expenses not strictly necessary from a purely economic perspective would be wasting resources.
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- The graph above shows whether the marginal social costs or the marginal private costs for the chemical firm to control its pollution are greater.
- Without any constraint the firm would operate at Q^{max} is the point where his control costs are zero.
- It is clear that the point max defines a suboptimal situation as there are major environmental damage but no effort is made to reduce the damage.
- In an economic sense, the optimal level of pollution is at Q^* where marginal social costs are equal to marginal private control costs.
- Contrary to intuition: the economically optimal level of pollution is not zero.

Measures to reduce emissions of greenhouse

- To reduce emissions of greenhouse gases, there exist a series of instruments, economic and other, which are briefly presented below:
- (1) Environmental taxes on CO₂ emissions.
 - This is quite easily feasible as there are fixed conversion factors between a unit of fossil energy (coal, gas, oil etc.) and CO₂ emissions.
 - To some extent, this is already practiced with taxes on fuel for cars.
 - However, coal, which creates far higher CO₂ emissions is not taxed at all.
- (2) The definition of property rights for environmental goods according to Coase.
 - This is an attractive point of view that, in practice, is nevertheless limited to local environmental goods, as in the opposite case the transaction costs would be too high to reach agreements between private.

- (3) Technical standards and regulatory standards.
 - This regards, for instance, energy efficiency improvements by forcing firms to install more efficient technologies.
 - To some extent these efficiency improvements happen “automatically” as new firms entering the market and autonomous technical change arrives.
 - However, technological change can also be price-induced.
- (4) Reducing energy subsidies.
 - In many countries (especially developing countries) energy consumption is subsidized.
 - This lowers prices, increases fuel consumption and GHG emissions.
 - A reduction of subsidies then brings benefits for both the economy and the environment.

- (5) Voluntary agreements.
 - Rather than submit to new regulations the industry is sometimes required to meet certain environmental targets.
 - The industry concludes with the government a “voluntary” agreement specifying the environmental objective but leaves freedom on how to achieve it.
 - Provided there is transparency, clarity of objectives, monitoring and sanctions in case of non-performance, voluntary agreements can constitute a flexible and efficient way of environmental policy.
- (6) Permit trading systems pollute are perhaps the most promising instrument for reducing emissions of greenhouse gases.

	Status quo	Tax (Pigou)	Standard	Permit Trading (grandfathering)
Polluters and their consumers	$A+B+C+D$	A	$A+B+C$	$A+B+C$
Public	$-C-D-E$	$-C$	$-C$	$-C$
Government	0	$B+C$	0	0
Total resource rent	$A+B-E$	$A+B$	$A+B$	$A+B$

...

	Permit Trading (no grandfathering)	Coase PR Polluters	Coase PR Public	Subsidy
Polluters and their consumers	A	$A+B+C+D+\frac{1}{2}E$	$A+B-B+C-C$	$B+C+A+B+C$
Public	-C	$-C-D-\frac{1}{2}E$	$-C+C+B$	-C
Government	B+C	0	0	-B-C
Total resource rent	A+B	A+B	A+B	A+B

Remarks:

- 1. If markets for polluting products are competitive;
 - the rents of polluters are competed away and they accrue fully to consumers
 - (frequently a large part of the population – think of electricity – which makes environmental policy so difficult –
 - compensation is name of the game; in theory, funds should not be earmarked;
 - in practice, they frequently need to be in order to absorb the shock of sudden distributional re-arrangements);



- 2. What should be done with Pigouvian tax receipts?
 - Do not earmark!
 - Green tax reform.
 - Factors of production that we want to see employed (labour) should be as cheap as possible;
 - those that we want to preserve (natural resources) should be as expensive as possible;
 - hence raise carbon tax, lower income tax;

- 3. A standard is less optimal than the other instruments, because polluters do not pay for the inframarginal units;
 - this brings inefficiencies not in the market for pollution but in the market for the underlying good:
 - over-investment in abatement cost technologies and not enough reduction of production since costs of pollution on infra-marginal units are too cheap ;
 - this is better for polluting firms and their customers; due to competition firms will invest in abatement technologies to satisfy the standard rather than choose production reduction;
 - prices will be higher but not as high as with Pigouvian tax; the benefit to consumers will be higher than with Pigouvian tax but smaller than the alternative surplus of the government.
 - This amounts to rent dissipation.



- 4. Nevertheless, transaction cost arguments favour standards for all but the economically most relevant externalities (CO₂, SO₂...).

Take into account environmental values (externalities): the dynamic vision

- The little evidence that exists on the link between economic growth and environmental quality is mixed.
- Studies have found that usually economic growth degrades the environment up to a level of economic well-being, where every resident has an annual revenue of USD 7 000.
- After this level, local air and water pollution decreases.
- This is due to structural change in economic activities and more severe standards on pollutants with impacts on public health.
- Other parameters did not show the same inflection.
- Land use and CO₂ emissions continue to increase with the growth.
- There is thus no generalized link between economic growth and environmental quality.
- This link depends on the environmental parameters analyzed and the particular situation of each country.



- It is often argued that free trade increase global pollution due to the outsourcing of dirty industries.
- Again, the evidence is mixed.
- In addition, protectionism can hardly impress with a brilliant environmental record.
- Industrialized countries financial subsidies were given to industries threatened by foreign competition.
- Often these industries were the ones who create the most problems for the environment such as agriculture, production of steel or aluminium or coal-based electricity production.
- These subsidies have maintained production in industries with heavy impacts on conservation and the environment.



- On the other side there is hope that the structural change towards new economic activities (services, Internet etc.) can improve the positive contribution of economic growth to environmental quality.
- In addition, the management expert Michael Porter made the assumption that increased competition will give an advantage to countries with strict environmental standards, because they will have the most suitable enterprises to satisfy the needs and requirements of the future of consumers increasingly attentive to the environmental performance of firms.
- Sometimes investment funds require firms where they invest increased environmental performance (ethical funds).



- There are good reasons to hope that the dynamic approach - taking into account the environment to improve corporate profitability - bearing fruit. The dimensions in which such a change may take place are the following :

- 1. An improved positioning in the market through an “environmentally responsible” brand image, e.g., Lafarge, Body Shop, Virgin etc.
- 2. The development of new markets (renewable energies ...)
- 3. The development of new products (Toyota Prius ...)
- 4. Better risk control, including legal and related risks, e.g., because of environmental damage (Brent Spar, Nike ...)
- 5. Financial savings due to better environmental performance (energy efficiency...)
- 6. More motivated employees (people prefer to work for clean businesses...)
- 7. Increased attention to waste management and technological improvements



- It is obvious that consumers play an important role here. In order for consumers to take on such a role, they should be assisted by improved information on the environmental performance of businesses and the environmental implications of their products.
- Transparency is one of the essential conditions to achieve a positive environmental outcome due to growth and trade. One element of this transparency is provided by ISO 14001 which specifies the behaviour necessary for a firm that wants to receive the label of good environmental performance.
- Eco-labelling recently much discussed in the context of the persistence of genetically modified organisms (GMOs) in food is another key topic to better manage the interface between economy and environment.
- Attempts to give more influence to consumers that are sensitive to environmental issue and well-informed is perhaps currently the most promising area of environmental policy.