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Externalities and environmental policies

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EXTERNALITY

AN EXTERNALITY IS THE EFFECT OF THE ACTION OF AN ECONOMIC SUBJECT ON THE WELLBEING OF OTHER SUBJECTS NOT DIRECTLY INVOLVED.

HARMFUL EFFECT

(NEGATIVE EXTERNALITY);

BENEFICIAL EFFECT

(POSITIVE EXTERNALITY)

HOW TO CORRECT EXTERNALITIES AS A MARKET FAILURES

Traditionally, we have different policies

However, private parties without governmental interventions may remedy by themselves to the market inefficiencies.

If the parties can contract without costs they can solve the problem of externalities by allocating resources efficiently.

Ronald H. Coase
(1910-2013)

Nobel Memorial Prize
in Economics 1991

The Coase theorem is the result of the studies of Ronald H. Coase (the article The Problem of Social Cost - 1960) is an attempt to demonstrate how through bargaining we can reach efficiency, such as a net sum of social welfare higher than that we can obtain with the intervention of the state or other forms of regulations.

COASE THEOREM CRITICS

- Coase theorem limits: it can be applied only when there are no transaction costs.
- In reality, it is difficult the bargaining between large companies and victims.
- The parties protract the negotiation trying to make the best deal.
- The parties involved are many and it is expensive to coordinate them.
- IT CAN BECOME NECESSARY THE USE OF THE STATE INTERVENTIONS

THE CHOICE BETWEEN DIFFERENT POLICIES

The choice between different environmental economic policies according to a criterion of economic efficiency.

Economic efficiency means that the cost of preventive measures is assessed in relation to the reduction of the amount of damage (expected cost).

In short, policies must pursue the dual purpose of internalising damage and giving incentives for the correct adoption of preventive measures.

TRADITIONAL COMPARISON BETWEEN POLICIES

REGULATION EX ANTE

versus

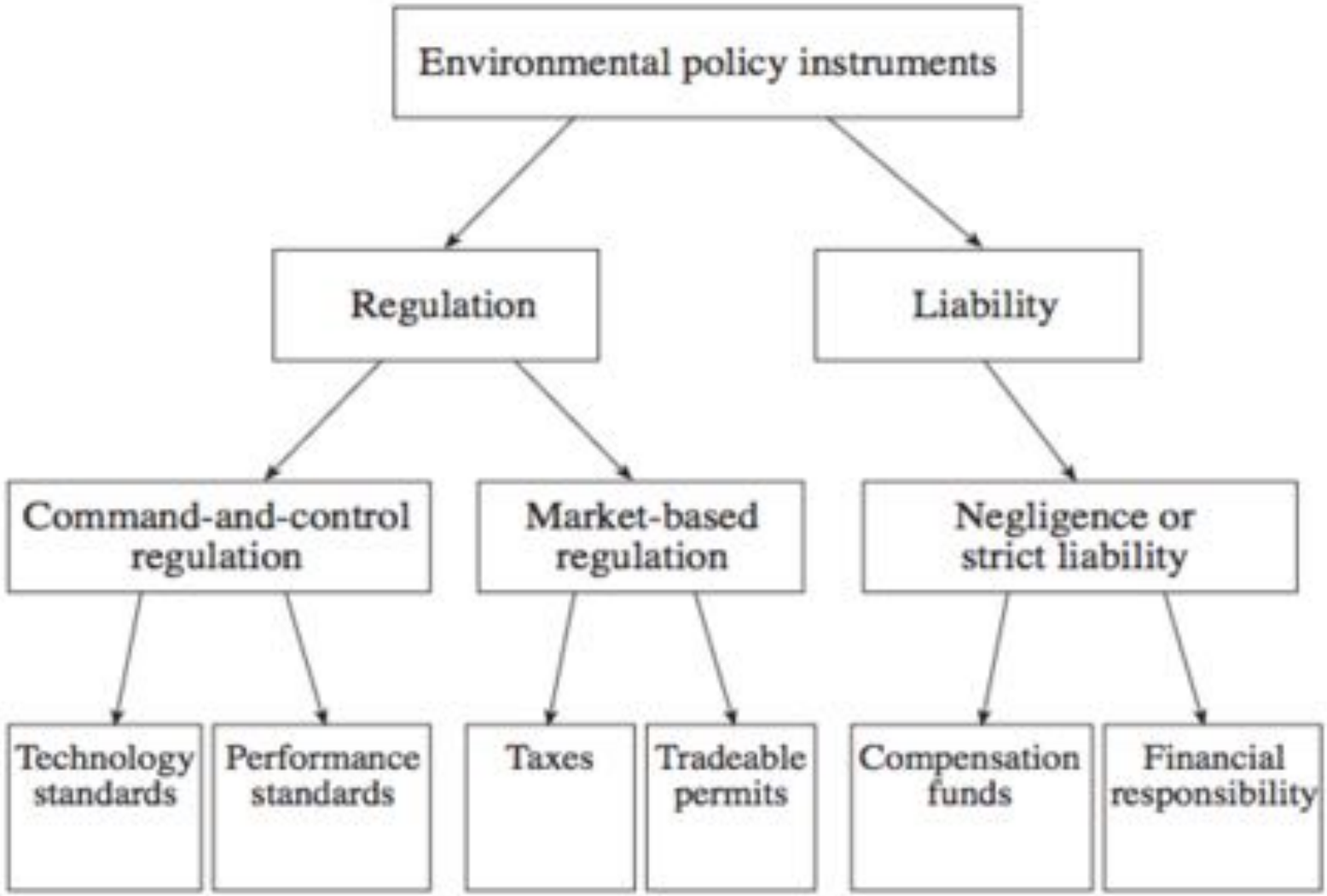
REGULATION EX POST

THE CASE OF ENVIRONMENTAL POLICIES

Public intervention is justified on the base of market failures because of two reasons:

1) the environment appears as a “public good” that may not be appropriated and has no market price;

2) the damage to the environment is a case of “externality”: it is fully or partly a social cost that is not going to be internalized by the parties causing it.



D. Porrini, "Environmental Policies Choice as an Issue of Informational Efficiency", in The Elgar Companion to Law and Economics, edited by Jurgen G. Backhaus, II ed., Edwar Elgar, 2005, pp. 350-363.

EX ANTE REGULATION

- Ex ante regulation policies are the most common system of regulation applied in the environmental sector

- examples: setting of standards, enforcement of Pigouvian taxes, sale of permits

- the standard-setting instrument is the most common and consists in the enforcement, by an agency, of a given prevention level

  (In the US experience, the EPA provides a clear example of regulation by an independent environmental authority)

DIRECT POLICIES
"COMMAND AND CONTROL" (CAC)

1. EMISSION LIMITS (standard performance)

2. TECHNOLOGICAL LIMITS (standard design)

EPA experience in the United States.

In Europe different systems in each country

The EEA (European Environmental Agency) is NOT providing for comand-and- control standards

INDIRECT POLICIES
(MARKET BASED INSTRUMENTS- MBI)

1. INCENTIVISING INSTRUMENTS (Pigouvian solutions)

TAXES on polluting substances

SUBSIDES on pollution reductions

Examples: Carbon Tax, Subsidies for alternative energies

2. MARKETABLE PERMITS

Cap & Trade system

Application in the Kyoto Protocol.

COMPARISON BETWEEN "PUBLIC-ORIENTED" AND "MARKET ORIENTED" INSTRUMENTS:

- The first kind of instruments are characterized by a public agency with a public definition of conduct rules and a public enforcement system;
- The second are based on market mechanism stimulating indirectly the conduct of the firm and characterized by a private administration and a private enforcement system.

First instrument:

COMMAND-and-CONTROL (CAC)

Public-oriented instruments, which require the use of a particular technology or the observation of a performance standards, prescribing the maximum amount of pollution that a source can emit.

- With perfect information, the centralized agency can systematically assess environmental risks in an optimal way.

COMMAND-AND-CONTROL POLICIES

- Command-and-control (CAC) policies are the most common system of regulation applied in the environmental policies in both the advanced and developing countries.
- As the name implies, the CAC approach consists of a 'command', which sets a standard, based on the maximum level of permissible pollution, and a 'control', which monitors and enforces the standard.
- In the US experience, the EPA provides a clear example of regulation by an independent environmental authority.

DIFFERENT COMMAND-AND-CONTROL POLICIES

In general, there are two types of standards:

1 Ambient standards set the minimum desired level of air or water quality, or the maximum level of a pollutant, that must be maintained.

2. On the other hand, an emissions standard specifies the maximum level of permitted emissions, that can be on two types:

2.1 Performance-based standards are the most common type. They stipulate emissions limits that each firm is allowed.

2.2 Technology-based standards not only specify emissions limits, but also the "best" technology that must be used

ADVANTAGES

- The advantage of centralised agencies is to assure high level of research in terms of measurement of costs and benefits of the different technical preventive instruments.

- Well-defined standards generate the correct incentive for the firm to act with caution and make the best production and prevention decisions

DISADVANTAGES

- The disadvantage of centralised agencies is to not be able to immediately follow the technological changes of the different industrial sectors.
- A big centralised agency can easily be subject to the political influence and to the lobbies pressure (capture)
- Firms have no incentives to reduce pollution beyond the standard.
- Penalties for violating standards tend to be too low and enforcement tends to be weak.

Second instrument: MARKET-BASED (MBI or EI - Economic Incentives)

Market-based instruments as regulatory devices that shape behavior through price signals rather than explicit instructions.

- With a perfect implementation the improvement to environmental quality is obtained at the lowest possible cost.

ONE TYPE OF MBIs:
ENVIRONMENTAL TAXES

- **A tax (or charge)** is a fee that is imposed on a pollutant in proportion to the amount of the pollutant released into the environment.
- We have different types of taxes.
- Similarly to the tax instrument we have subsidies

DIFFERENT TYPES OF TAXES

Taxes may be classified in the following categories:

1. Emission (or effluent) charges is based on the actual amount of the pollutant discharged.
2. Product charges or levies is a mark-up on the price of a pollution-generating product that is based on the amount responsible for pollution.
3. User charges is a fee levied on the user of an environmental resource based on the costs of treating emissions (or effluents) that affect the resource.

ADVANTAGES OF TAXES

- Taxes give consumers and firms an economic incentive to reduce pollution.
- Unlike standards, which are applied uniformly to all polluters, charges enable firms to adopt a cost-effective solution to pollution abatement.
- Compared to standards, there is a stronger incentive for firms to adopt new technology in order to lower the charges they have to pay.

DISADVANTAGES OF TAXES

- An 'optimum' tax is often difficult to set for certain non-market environmental commodities.
- Firms could pass on a portion of the tax or charge to consumers in the form of higher product prices.
- Costs of monitoring the compliance may be high if charges are based on the emission.

SUBSIDIES

- A subsidy is a payment or tax concession that assists firms to reduce pollution. In that sense a subsidy is the opposite of taxes.

- The subsidy could be offered in proportion to the per unit reduction in pollution, or it could be offered for the purchase of pollution abatement equipment or technology.

COMPARISON OF TAXES AND SUBSIDIES

- In theory, both taxes and subsidies should result in the same optimum level of environmental quality. However, there could be the following differences:

- Where there is unrestricted entry into the industry, subsidies could attract more firms and therefore aggregate pollution could increase in the long-run

- Subsidising polluters may be seen as socially unjust because some may see this as taking income away from the society

TRADABLE PERMITS

A tradable permit system is defined as quantity-based environmental policy instrument.

The regulatory authority stipulates the allowable total amount of emissions (cap) and the right to emit becomes a tradable commodity.

Under a cap-and-trade system, prices are allowed to fluctuate according to market forces. Thus, the price of emissions is established indirectly.

Permits could be allocated to firms via auction or through free allocation.

PROS AND CONS

A well functioning emissions trading system allows emissions reductions to take place wherever abatement costs are lowest.

Emissions trading has the advantage of fixing a certain environmental outcome: the aggregate emissions levels are fixed, and companies pay the market rate for the rights to pollute.

This also makes emissions trading more conducive to international environmental agreements, such as the Kyoto Protocol, because specific emissions reduction levels can be agreed upon easily.

CHOOSING BETWEEN DIFFERENT ENVIRONMENTAL POLICY INSTRUMENTS:

ex ante versus ex post instruments

EX POST REGULATION UNDER A LAW AND ECONOMICS POINT OF VIEW

- The instruments such as Command and Control and Market Based ones are instruments of *ex ante* regulation
- Liability is analyzed as an instrument of *ex post regulation*.
- Through instruments of regulation *ex post* there are the possibility for the individuals in the market to sue a firm for her polluting behavior: on this point of view liability can be seen as an instrument of control after the event happens, but with *the* effects of deterrence.

EX POST REGULATION RESULTS IN TERMS OF EFFICIENCY

- Liability can provide the internalization of externalities (damage compensation)
- Liability is against impunity because of the possibility for injured parties to sue an infringing firm (action possibility)
- Liability makes the firms behave in a diligent way (deterrence incentive)

THE U.S. LIABILITY SYSTEM

- The experience of the US with environmental issues provides an excellent example in several respects.

- The issue of environmental liability in that country, in fact, fully emerged in the 1980's, when several environmental-pollution cases were recorded and, at the same time, an increased number of small enterprises entered risky sectors.

- In 1980 the Congress accordingly issued the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

- CERCLA and a whole range of amendments in the following years have the objective to cope with the decontamination of the sites subject to environmental risks by charging the reimbursement of the clean-up costs to the liable parties and
- It was also created a public fund, the Superfund.

- The liable parties were considered to include the owners and the operators of the affected sites, as well as the current owners and operators, the generators of dangerous polluting materials stored on those sites, and the carriers of such materials.
- All these parties are retroactively, objectively, and jointly liable, therefore each may be held responsible for the whole amount of the damage.

THE BUILDING OF AN EUROPEAN ENVIRONMENTAL POLICY: Environmental Liability Directive (“ELD”)

- Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage.
- The Directive establishes a framework for environmental liability based on the "polluter pays" principle, with a view to preventing and remedying environmental damage.
- The ELD aims at ensuring that the financial consequences of certain types of harm caused to the environment will be borne by the economic operator who caused this harm. Insofar as the ELD provides for the financial responsibility of an operator, it lays down a framework, based on the “polluter-pays” principle,

CLASS ACTION

- A class action is a form of lawsuit in which a large group of people collectively bring a claim to court and/or in which a class of defendants is being sued.

- In the US system class action exists and, though sometime criticized, it is still defined a versatile and useful legal device permitting the enforcement of ex-post regulation.
- In EU the Directive 98/27/EC seems to push towards the adoption of class actions in national law, but until now it did not happen.
- Since January 2010, introduction in Italy, particularly for consumers' protection.

MAIN CLASS ACTION ECONOMIC FEATURE

Class action in a legal device able to bind individuals with related claims represented by the class counsel after a certification procedure by judges.

- It favors the emergence of efficiency in judicial market, ‘judicial economy’, by means of economies of scale both on plaintiff and courts.
- It solves the failure in judicial market (suboptimal demand of lawsuits) by increasing the affordability of legal protection and enforcement for the possibility of indirect representation.
- A judicial system with class action permits less impunity because of the incentive for injured parties to sue an infringing firm.