

WORKING OF POLLUTION-TAX AND TRADABLE-PERMITTS TO CONTROL ENVIRONMENTAL POLLUTION

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Abstract

Industrial activity is one of the main reasons for environmental pollution. Industries are not only causing air pollution, they are contributing a lot to water and land pollution too. The economists consider this environmental damage as a negative externality or an external cost. Something which has to be borne by the rest of the society and not by the producer causing it. Unless concrete measures are taken to internalize these externalities, the private producers driven by their profit motive will not take concrete measures to curtail the pollution. Such measures are to be taken by the government. Government has the authority and responsibility to make the industry behave in a responsible manner.

With the ever-growing intensity and severity of the problems like global warming, ozone depletion and acid rain, the governments across the world cannot just sit back and watch the companies destroy the planet.

The current paper tries to describe some of the measures which can be adopted by the government to compel the industrial sector to control the ecological damage and practice eco-friendly practices.

The paper is divided into 4 parts. The first part describes the concept of negative externalities and graphically displays how it causes loss of social welfare. The second section illustrates the measures which the government can adopt to compel the private producers to consider the external cost of environmental damage as their internal cost. The third section describes the advantages of these measures and the last section shows its limitations.

Keywords : Environmental Pollution, Negative Externalities, Government Intervention, Pollution Tax, Tradable Permits.

NEGATIVE EXTERNALITIES

Anything that one individual does, may have some effect on others. Sometimes, the actions of either consumers or producers result in costs or benefits that do not reflect as part of the market price. Such costs or benefits which are not accounted for by the market price are called externalities because they are "external" to the market.

There is an externality when a consumption or production activity has an indirect effect on other's consumption or production activities and such effects are not reflected directly in market prices.

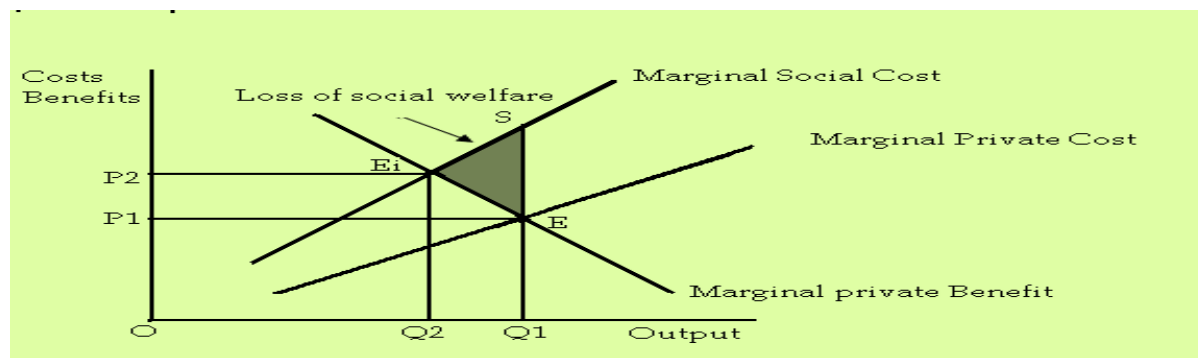
Externalities are also referred to as 'spillover effects', 'neighborhood effects' 'third-party effects' or 'side-effects', as the originator of the externality imposes costs or benefits on others who are not responsible for initiating the effect.

Negative externalities like pollution (and the consequent climate change) impose external costs on society that extend beyond the private cost of production as originally intended by the producer. When firms do not have to worry about the negative externalities (external costs) associated with their production, the result is excess production and unnecessary social costs.

A negative externality or an external cost is not taken into consideration by the producer. As a result he will over-produce this product. One of the most frequently occurring negative externality in production is the environmental pollution caused by the industry.

The market failure and the consequent loss of social welfare can be shown with the diagram below.

Negative Externalities and Loss of Social welfare



The equilibrium level of output that would be produced by a free market is Q_1 at which marginal private benefit (MPB) is equal to marginal private cost (MPC). Marginal social cost (MSC) represents the full or true cost to the society. It includes marginal private cost (MPC) and marginal social cost (MSC). We can see that marginal social cost (Q_1S) is higher than marginal private cost (Q_1E). Social efficiency occurs at Q_2 level of output where MSC is equal to MSB.

Output Q_1 is socially inefficient because at Q_1 , the MSC is greater than the MSB and represents overproduction. The shaded triangle represents the area of dead-weight welfare loss. Thus, we conclude that when there is negative externality, a competitive market will produce too much output relative to the social optimum. This is a clear case of market-failure where prices fail to provide the correct signals.

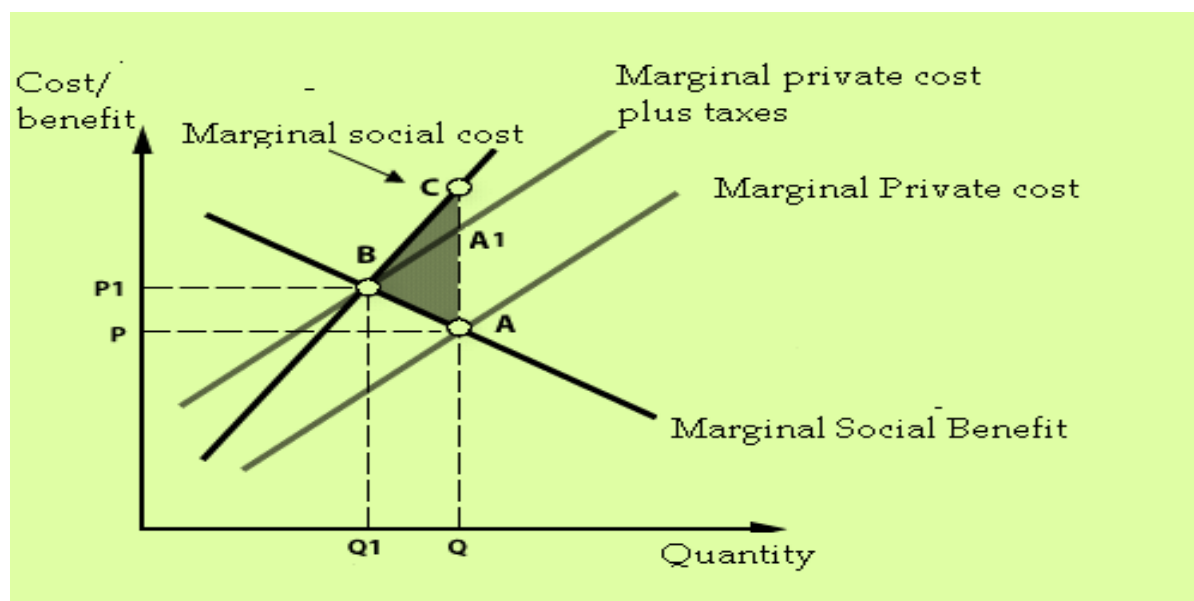
GOVERNMENT INITIATIVES TOWARDS NEGATIVE EXTERNALITIES OF ENVIRONMENTAL POLLUTION

- 1. Direct controls that openly regulate the actions of those involved in generating negative externalities:** Government can ban the production and sale of some environmentally dangerous products like polythene, certain chemicals and pesticides which emit toxins during the production process.
- 2. The market-based approaches—environmental taxes and cap-and-trade—operate through price mechanism to create an incentive for change.**

The key to internalizing an externality (both external costs and benefits) is to ensure that those who create the externalities include them while making decisions.

Pollution Tax: One method of ensuring internalization of negative externalities is imposing pollution taxes. The size of the tax depends on the amount of pollution a firm produces. These taxes are named Pigouvian taxes after A.C. Pigou. These taxes, by 'making the polluter pay', seek to internalize external costs into the price of a product or activity. For each unit of pollution, the polluter must choose either to pay the tax or to reduce pollution through any means at its disposal. Tax increases the private cost of production or consumption as the case maybe, and would decrease the quantity demanded and therefore the output of the good which creates negative externality. The proceeds from the tax can be specifically spent for projects that protect or enhance environment.

Market Outcomes of Pollution Tax



When negative production externalities exist, marginal social cost is greater than marginal private cost. The free market outcome would be to produce a socially non-optimal output level Q at the level of equality between marginal private cost and marginal private benefit. (Since externalities are not taken into account, marginal private benefit would be considered as marginal social benefit). When externalities are present, the welfare loss to the society or dead weight loss would be the shaded area ABC . The tax imposed by

government (equivalent to the vertical distance AA₁) would shift the cost curve up by the amount of tax, prices will rise to **P₁** and a new equilibrium is established at point B, where the marginal social cost is equal to marginal social benefit. Output level Q₁ is socially optimal and eliminates the whole of welfare loss on account of overproduction.

Tradable Emissions Permits: The second approach to establishing prices is tradable emissions permits (also known as cap-and-trade). These are marketable licenses to emit limited quantities of pollutants and can be bought and sold by polluters. Under this method, each firm has permits specifying the number of units of emissions that the firm is allowed to generate. A firm that generates emissions above what is allowed by the permit is penalized with substantial monetary sanctions. These permits are transferable, and therefore different pollution levels are possible across the regulated entities. This establishes a price for pollution, just as in case of the tax. The high polluters have to buy more permits, which increases their costs, and makes them less competitive and less profitable. The low polluters receive extra revenue from selling their surplus permits, which makes them more competitive and more profitable. Therefore, firms will have an incentive not to pollute. India is experimenting with cap-and-trade in the form of Perform, Achieve & Trade (PAT) scheme and carbon tax in the form of a cess on coal.

The two interventions mentioned above i.e. *permits* and taxes make use of market forces to encourage consumers and producers to take externalities into account when planning their consumption and production. In other words, the polluters are forced to consider pollution as a private cost.

ADVANTAGES OF POLLUTION TAX AND TRADABLE PERMITS

The advantages of tradable permits are:

- ✓ Producers are compelled to consider the external cost of pollution as their internal cost.
- ✓ The system allows flexibility to producers. If they are ready to bear the pollution tax and buy the permits, they can continue in the business
- ✓ These measures reward efficiency. Those who are more efficient in controlling the pollution will have to bear a lower cost and thus will get a competitive advantage over their rivals.
- ✓ It is administratively cheap and simple to implement and it ensures that pollution is minimized in the most cost-effective way
- ✓ It also provides strong incentives for innovation. Companies are inspired to invent new eco-friendly technologies to cut their cost.
- ✓ Consumers may benefit if the extra profits made by low pollution firms are passed on to them in the form of lower prices.

LIMITATIONS OF POLLUTION TAX AND TRADABLE PERMITS

- ✓ Pollution taxes are difficult to determine and administer because it is difficult to discover the right level of taxation that would ensure that the private cost plus taxes will exactly equate with the social cost.
- ✓ If the demand for the good is inelastic, the tax may only have an insignificant effect in reducing demand. In the case of goods which have inelastic demand, producers will be able to easily shift the tax burden in the form of higher product prices. This will have an inflationary effect and may reduce consumer welfare.
- ✓ It involves the use of complex and costly administrative procedures for monitoring the polluters.
- ✓ This method does not provide any genuine solutions to the problem. It only establishes an incentive system for use of methods which are less polluting.
- ✓ Pollution taxes also have potential negative consequences on employment and investments because high pollution taxes in one country may encourage producers to shift their production facilities to those countries with lower taxes.

CONCLUSION

It is difficult to assume that private sector will take initiative in controlling environmental pollution. Unless the government intervenes, private factories won't take steps for environmental protection. It is the responsibility of the elected government to protect the people and planet from the self-maximizing tendencies of the private producers. Two such effective measures to internalize the negative externalities of ecological damage are imposition of pollution tax and system of tradable permits. Although these measures have certain limitations, they can prove very effective in curtailing climate change. The developed countries have already implemented these measures. It is high time the developing countries also implement them in an effective manner.

REFERENCES

- Metcalf Gilbert E, 'Paying for Pollution: Why A Carbon Tax is Good for America', Oxford University Press, 2019.
- Hanley Nick, Shogren Jason F, White Ben, 'Environmental Economics in Theory and Practice', Springer Nature, 2019.