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The Polluter Pays Principle

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INTERNATIONAL INSTITUTE FOR ENVIRONMENT AND DEVELOPMENT

LONDON ENVIRONMENTAL ECONOMICS CENTRE

GATEKEEPER

THE POLLUTER PAYS PRINCIPLE

by

David Pearce

GATEKEEPER SERIES

This **Gatekeeper Series** is produced by the London Environmental Economics Centre (LEEC). This Centre was established in 1988 and is a joint venture by the International Institute for Environment and Development (IIED) and University College London (UCL). Its aims are the furtherance of policy relevant research in the field of environmental and natural resource economics, particularly in the context of developing countries.

This **Gatekeeper Series** highlights key topics in the field of environmental and resource economics. Each paper reviews a selected issue of contemporary importance and draws preliminary conclusions of relevance to development activities. References are provided to important sources and background material.

The Swedish International Development Authority (SIDA) funds the series, which is aimed especially at the field staff, researchers and decision makers of such agencies.

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Historical Background

The polluter pays principle (PPP) was adopted by OECD countries in 1972. The Council of OECD recommended a set of 'guiding principles' that should be followed by member governments. In order to reduce pollution and improve the allocation of resources, public measures are required to ensure that

> '.. prices of goods depending on the quality and/or quantity of environmental resources reflect more closely their relative scarcity and that economic agents concerned react accordingly.' (OECD, 1975, p.12).

These principles included a definition of the PPP as meaning

> '..that the polluter should bear the expenses of carrying out the above mentioned measures decided by public authorities to ensure that the environment is in an acceptable state. In other words, the cost of these measures should be reflected in the cost of goods and services which cause pollution in production and/or consumption.' (OECD, 1975, p.13. Our emphasis).

The Underlying Economics of the PPP

The PPP requires that the polluter should bear the costs that pollution damage or pollution control imposes on society. By 'internalising' these costs they become part of the normal (private) costs of producing goods and services. Essentially, the otherwise free services of the natural environment are being priced and treated as if they are similar in nature to labour or capital costs. The effect of this internalisation is threefold:

(i) costs of production rise and hence output of the polluting product may decline;

(ii) the polluter may pass on part of the increased cost of production to the consumer in the form of higher prices, i.e. the 'consumer pays' to some extent;

(iii) the polluter may switch from polluting to less polluting technologies in an effort to avoid the costs of adding on pollution control to existing technology, or may switch out of polluting products into less polluting ones.

Any or all of these effects may occur and all are anticipated

effects of the PPP. That is, all these effects should occur.

Misunderstandings About the PPP

Among many misunderstandings about the PPP two stand out. First, it is thought that 'polluter pays' means that the manufacturer or provider of the service is the polluter and hence only he or she should pay the costs of clean-up, damage or pollution prevention. That the cost is shared with the consumer appears unfair. In fact, however, the consumer should receive signals in the market place that the product in question is polluting. It is therefore wholly consistent with the PPP that market prices for polluting products should rise relative to less polluting ones. Consumers then have an incentive to respond by altering their behaviour, just as the PPP guiding principles require. The idea that consumers should not pay tends to be expressed in concerns about the effect on inflation. Since the prices of polluting products rise, the overall level of inflation may rise. This tends to reflect the confusion over the purpose of the PPP and shows up in the second concern.

Second, the PPP is widely thought of as a tax, and therefore as a means to generate tax revenues. In fact the PPP is consistent with any means of making the polluter pay, e.g. by setting environmental standards which require expenditure on pollution abatement equipment. But even if the PPP takes the form of a tax, it is, however, an incentive charge – its aim is to alter behaviour, not to raise revenues. It will have the effect of raising tax revenues if producers or consumers are 'locked in' to existing technologies or products, i.e. they cannot find ready substitutes. But then the PPP encourages both agents to look for new technologies and substitute products. In the long run the tax burden to each agent can be minimised because consumers and producers will substitute less polluting for polluting products, while the tax authorities can return any revenues raised to industry and the consumers in the form of cuts in other taxes. By making the pollution tax 'revenue neutral' there is no need for the tax to make anyone worse off.

Methods of Internalising Cost

In the discussions leading up to the formulation of the PPP the economists involved tended to regard the PPP as a tax or charge. This reflected the widespread academic discussion about Pigovian externality taxes. Externality relates to any uncompensated cost that is imposed on a third party by a polluter (an 'external benefit would be an unappropriated benefit accruing to third parties). 'Pigovian' refers to A.C.Pigou, the author of The Economics of Welfare in the 1930s who showed how a tax could be

used to correct for market distortions caused by what we would now call externality. The Pigovian tax would be set equal to the monetary value of the extra damage caused by the pollution at the point of 'optimal' pollution. Basically, optimal pollution occurs where the costs of abating pollution any further are greater than the extra benefits obtained. To economists, then, optimal pollution is rarely zero pollution. It can be shown that such a Pigovian tax has the property of maximising the net benefits to society as a whole.

In practice it is virtually impossible to say what the optimal level of pollution is because of the difficulties of measuring the monetary value of pollution damage and the costs of control. But hardly any economic policy has the capability of securing optima in this sense, so that this difficulty is not a compelling reason for rejecting the tax idea. However, even if we settle for an 'acceptable' level of pollution, the level of tax required to achieve it may be very difficult to compute. This suggests the idea of 'iterating' the tax, i.e. setting it at one level, seeing what happens, and then altering it up or down accordingly. Such ideas tend to attract their own criticism, especially as industry may not always trust the taxing authorities to use the tax for anti-pollution purposes only. In general, the incentive tax/charge approach is not widely used in environmental policy, although charges with other objectives (e.g. revenue raising) are quite widespread (Opschoor and Vos (1989)).

The other means of 'making the polluter pay' involve setting environmental standards or using tradeable permits. Standards impose a cost on the polluter if he does not already meet them as an incidental feature of choice of technology. Those costs increase the costs of production and hence prices. Marketable permits operate differently. They take the standard and translate it into 'pollution permits' equal in aggregate value to the amount of emissions allowed under the standard. Firms are then allocated the permits and the issuing authority receives revenue for them. Firms are then free to buy and sell the permits. The attraction of this approach is that polluters who face high costs of abatement will tend to buy the permits, while those with low costs of abatement will make gains by selling the permits and abating the pollution. In this way the abatement of pollution is concentrated among the low abatement cost polluters. The overall effect is to minimise the costs of compliance.

Of the non-taxing approaches, then, permits are, in principle, to be preferred to standard-setting because, although they should achieve the same level of environmental quality, they do so at lower compliance costs. Hahn and Hester (1987) show that permit trading under the US Clean Air Acts saved industry over $4 billion up to 1985. Pigovian-style taxes also have a cost-minimising property but generally appear to be higher cost than marketable permits.

PPP in the Developed World

The very broad interpretation of the PPP as any mechanism involving polluters bearing costs of environmental control means that the PPP is 'in place' in all OECD countries simply because all countries have environmental policies based on standard setting. True 'Pigovian style' PPP is generally not practised, but is very likely to have a more significant place in future environmental policy. Marketable permits are in place under US air quality measures and in one or two other applications.

PPP in the Developing World

The idea of charging polluters is, in principle, no less applicable in the developing countries. However, fiscal authorities tend not to have the institutional capacity to implement them even if they were an article of environmental policy. Pigovian-style charges would be very difficult to estimate because of major problems in estimating pollution damage. Nonetheless there are signs that all these problems are gradually diminishing.

In many developing countries the issue is perhaps not one of introducing additional charges for pollution damage and control, but of raising existing prices to reflect the private costs of production. Many agricultural input prices (fertilizers, pesticides, irrigation water) and energy prices are well below their costs of production, or are below their internationally traded price. The result is huge subsidies which act as a severe drain on government revenues. By raising prices, cost recovery can be improved and the environment can gain as well as there is less waste of resources. Use of the PPP remains relevant to the developing countries, but price reform design to get even the private costs of production reflected in prices would seem to be the first step (Repetto (1986), Kosmo (1989)).

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The London Environmental Economics Centre is a joint initiative of IIED and the Department of Economics of University College London. It has been funded by core contributions from the governments of Sweden, Norway and the Netherlands.

The Centre has as its main objectives:

- Research into environmental problems of less developed countries from an economic standpoint;
- Dissemination of research and state of the art environmental economics through publication, public and professional address and specialist conferences;
- Advice and consultancy on specific issues of environmental policy.

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