TAX INCENTIVES FOR POLLUTION CONTROL: THE OREGON CASE

by

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Pollution control legislation passed in recent years by the federal and many state governments is a response to the general concern for improvement in the quality of the environment. Presumably, the social benefits, at least of marginal improvements in environmental quality, are greater than the costs. Because the people that would benefit from the reduction of environmentally damaging residuals are not necessarily those responsible for those residuals, the question of who should bear the cost (at least initially) of cleaning up the environment becomes important. Economists are not in complete agreement relative to the distribution of cleanup costs which would be most efficient and equitable.

Alternative methods for reduction of environmentally damaging residuals have received substantial attention in the literature. These include effluent standards, stream standards, effluent charges, payments for reducing effluents, taxes on products causing pollution, taxes on inputs causing pollution, and subsidies for constructing effluent treatment facilities. These alternatives differ in terms of their costs, economic incentives for environmental control, and the distribution of these effects across society. Effluent charges (possibly in combination with air and stream standards) have been argued to be the most economically efficient method to achieve improved environmental quality [1,2,5].

While there is at least some agreement among economists that a system of effluent charges would be the most efficient method of improving water quality, government action, with few exceptions, has chosen other methods. The federal government has (along with the states) set water quality standards for streams, offered substantial subsidies for construction of municipal waste treatment facilities and provided for rapid

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tax depreciation on pollution control facilities. Some states (such as Connecticut, North Carolina, Oklahoma, and Oregon) have tax incentive programs related to the construction of pollution control facilities. Fines can be imposed by both state and federal governments for spills and for violations of standards, but the use of effluent charges is very limited and possibly non-existent at the state and federal level. Some municipal sewage systems assess charges to industrial users of the system based on the strength of the firm's sewage, but this is not equivalent to an effluent charge for residuals deposited in a stream.

Why have the pollution abatement programs of state and federal governments not been in accord with those resulting from economic analysis, i.e., effluent charges? One possibility is that economically efficient solutions are not politically or socially acceptable. But there may be other reasons for non-use of effluent charges.

A system of effluent charges requires knowledge of the level of residuals produced by each discharger and the social benefits from reduction of pollutants. Neither is known with any substantial degree of certainty. Kneese points out that the fact that dischargers don't know what they are discharging is not a good excuse -- they should know [4]. However, obtaining accurate information on the release of residuals to air and water is a formidable task. Estimation of social benefits from decreased discharge to water is also very difficult, because most of the benefits are recreational and aesthetic. While the benefits to municipal and industrial water users of increased water quality would be relatively easy to estimate, these are quite low and would not justify much control of waste discharge [5].

The purpose of this paper is to explore the use of state tax incentives (a form of subsidy) as an alternative policy measure for pollution control. The discussions will relate primarily to the Oregon tax relief program which has been in effect since 1967, but many of the points would apply to similar tax incentive programs that might be enacted in other states. We believe that economists have an obligation to consider economic incentives that are politically acceptable as well as those that are theoretically correct.

The article consists of three parts: (1) an explanation of Oregon's tax relief program for pollution control facilities, (2) an illustration of the benefits of this program to firms constructing pollution control facilities, and (3) a discussion of some aspects of Oregon's tax incentive program relative to other methods for reduction of environmentally damaging residuals.

Tax Incentives for Pollution Control in Oregon

In 1967, Oregon legislation was enacted ". . . to assist in the prevention, control, and reduction of air and water pollution in this state by providing tax relief with respect to Oregon facilities constructed to accomplish such prevention, control, and reduction" [9, pp. 1423-1424]. The legislation was subsequently amended in 1969 and 1971. The tax relief can be realized under either of two options: a state income tax credit, or a property tax exemption.

In order to qualify for either of these two tax options, the facility must be certified as a "Pollution Control Facility" by the Oregon Department of Environmental Quality. The Department will determine the percentage of the facility's actual cost which is properly allocable to pollution control. Specifically, the percentage will be certified as 80 percent or more, 60 to 80, 40 to 60, 20 to 40, or less than 20 percent. The taxpayer must then elect the tax relief option. This decision is irrevocable.

The Income Tax Credit Option

The annual tax reduction under the income tax credit option is five percent of the cost of the facility if 80 percent or more of the facility's cost is certified as allocable to pollution control. The annual tax credit decreases in proportion to the percentage of cost allocable to pollution control. For a facility costing $100,000 and certified at 60 to 80 percent, the annual credit is four percent of the cost, or $4,000. The credit claimed in any year cannot exceed the state income tax liability for that year. However, any allowable, but unused, credit may be carried forward three years.

The tax credit may be claimed only in those tax years beginning on or before December 31, 1978. Thus, a facility completed and certified in 1972 would be eligible for the income tax credit during the next seven years. If completed in 1973, eligibility would be for six years.

Additional provisions require that the income tax credit is in lieu of any depreciation deduction for the facility to which the taxpayer would otherwise be entitled on his state income tax return for that year. Also, the state tax credit is reduced, dollar for dollar, by any federal grants involving the pollution control facility.

The Property Tax Exemption Option

The annual tax reduction under the property tax exemption depends on the assessed taxable value of the facility for that year, the local property tax rate, and the highest percentage certified allocable to pollution control. Thus, the $100,000 facility with an $80,000 assessed taxable value, certified at 60 to 80 percent, where the ad valorem tax rate is $25 per $1,000, would provide a property tax savings of $1,600 for that year ($80,000 times 80 percent times 2.5 percent).

The duration of the property tax exemption depends on when the facility is completed and certified. A facility completed in 1972 would be exempt for 18 years; a facility completed in 1973 for 16 years; in 1974 for 14 years; and so through 1978.

This property tax exemption option is not allowed on a pollution control facility installed or first used after December 31, 1973, unless the taxpayer owned or leased the property it was installed upon, and conducted the business requiring pollution control as of January 1, 1967. Federal grants do not reduce the exemption, and this option allows the depreciation deduction.

The Benefit in Tax Relief to the Polluter

An example will illustrate the magnitude of the tax relief under the two options of Oregon's program. Suppose a pollution control facility

is completed in 1972, and certified with 60 to 80 percent of its $100,000 actual cost properly allocable to pollution control (Table 1). The annual income tax credit is four percent of $100,000, or $4,000. With a six-percent state income tax rate, the increased tax resulting from a disallowed depreciation deduction of $8,000 is $480, making the annual net benefit $3,529.[1/]

TABLE 1. Benefits to the Firm by Tax Relief Option for a $100,000 Pollution Control Facility Completed in 1972.

	Income tax credit	Property tax exemption
Average annual credit or exemption.....	$ 4,000	$ 1,600
Added tax on decreased deductions.....	- 480	- 96
Annual net state tax reduction.....	$ 3,520	$ 1,504
Number of years eligible.....	24,640	27,072
Present value of reduction (7%).....	18,970	16,809

Now assume that the annual property taxes on the facility will average $2,000 over the 18 years of eligibility.[2/] The average exemption then would amount to 80 percent of $2,000, or $1,600 per year. This exemption will reduce the property tax deduction on the state income tax return, increasing income taxes by $96 ($1,600 times 6 percent). The average annual net tax reduction is $1,504.

The income tax credit extends over seven years for a total net tax reduction of $24,640. The property tax exemption totals to $27,072 over 18 years. However, the two totals are not directly comparable, due to the time value of money. Discounting the future tax savings at seven percent, the present value of state and local tax relief is $18,970 under the credit option, and $16,809 for the property tax exemption.

The analysis presented here is for example purposes only. In deciding which tax option to elect, the taxpayer would need to evaluate the two

options for his own situation.[3]

Comments on Oregon's Tax Incentive Program

The following discussion is offered to stimulate thinking and analysis of the merits of alternative methods for pollution abatement:

1. Water and air are valuable natural resources, because they (1) provide inputs to production processes, sustain life, and offer recreational and aesthetic benefits, and (2) provide for the disposition of residuals. A system of effluent charges assumes that individuals, firms, and municipalities have a "right" to "clean" air and water. Subsidization of firms and municipalities by state and federal governments to reduce pollution is an endorsement of the "right" to use air and water as waste disposal mediums. While most public opinion, legislation, and economic analysis takes the position of the "right" to clean air and water, it has been pointed out in the literature that property rights in air and water have not been clearly defined [3,10]. A legal case might be made that polluters have a right to the use of air and water for disposal, at least in part, because they have been allowed to so use the air and water for long periods in the past. The Oregon legislation [9] recognized this latter right by acknowledging the responsibility of the state to share in the cost of pollution abatement.

2. Even with a subsidy for construction of pollution control facilities, it may still be less costly to continue to discharge residuals. To be effective, the subsidy system must be combined with effluent or stream standards [4]. Oregon has both air and water quality standards. For example, regulations require that no wastes from confined livestock facilities enter any stream in Oregon at any time except as permitted by a waste discharge permit [8].

3. While the costs of pollution control to meet standards will be included in decisions relative to new production facilities, controlling pollution from production facilities existing prior to the setting of standards involves more complicated analysis relative to who should pay the costs [6]. The Oregon tax incentive program partially recognizes

this distinction by making the property tax exemption on facilities constructed after December 31, 1973 available only to taxpayers who owned or leased the property it was installed upon, and conducted the business requiring pollution control as of January 1, 1967.

4. The use of effluent charges assumes, implicitly if not explicitly, that wastes are discharged at a point and are subject to measurement. Some residuals are generated from diffuse, rather than point, sources and may also be indistinguishable from materials occurring naturally in the environment. Such is the case with some agricultural residuals such as nitrogen and phosphorus. Intermittent and highly variable waste discharges, such as those from feedlots, could make the imposition of effluent charges a cumbersome process.

5. The provisions of Oregon's tax relief program reward prompt action on pollution control. Because of the cutoff date on the income tax credit (December 31, 1978), and a reduction of two years' property tax exemption for every year of delay in completion of facilities, the cost (in the form of less tax relief) of each year's delay is one to four percent of the initial investment in the pollution control facility.

6. Subsidies for construction of pollution control facilities have been criticized [5] for not insuring effective operation of the facilities, once constructed. The Oregon program provides for revocation of the certificate (loss of tax credit or exemption) if the facility is not operated ". . . for the purpose of, and to the extent necessary, for preventing, controlling, or reducing air or water pollution as specified in such certificate" (Oregon Revised Statutes 449.645). The effectiveness of this provision, of course, will depend on the procedures for monitoring the operation of these facilities.

7. Subsidies for the construction of industrial waste treatment facilities have been criticized for favoring investment in waste treatment facilities, when in-plant process changes might provide less costly methods of achieving a given decrease in pollutant discharge to streams [5]. The Oregon legislation provides incentives for both types of control. Investment in any facility can be certified for the tax credit

or exemption, to the extent that it qualifies as a pollution control facility, i.e., the substantial purpose of its use, erection, construction, or installation is the prevention, control, or reduction of air or water pollution (Oregon Revised Statutes 449.605).

8. Income tax credits are an incentive only if the firm investing in pollution control facilities earns a large enough net income to be subject to tax. The less profitable firms, which may be the worse polluters, receive less benefit from an income tax credit program. However, under the Oregon program, a firm could still benefit by selecting the property tax option.

9. Under a properly operated effluent charge (or payments) system, the economic incentive is directly related to the discharge of effluents. A tax incentive program does not necessarily provide such a direct incentive for reduction of waste discharge. Thus, it is possible that facilities could be certified for the tax credit or exemption, but not result in reduction of pollution. The ultimate effectiveness of the tax incentive will depend on the program's administration by the Oregon Department of Environmental Quality.

10. A system of tax incentives represents income transfers from all taxpayers to those firms who invest in pollution control facilities. If firms pay all the cost of pollution control, consumers will likely pay higher prices for goods than if the costs are partially subsidized. The total cost borne by society may not ne different with and without subsidies, but there may be important income distribution and equity differences. The subsidy program may shift some of the cost of pollution control from low to higher income groups depending on the tax structure.

Footnotes

1/ The assumed $8,000 annual depreciation deduction is based on a 10-year life, 20 percent salvage value, and straight-line method of depreciation.

2/ This is based on a $25 per $1,000 tax rate on a declining assessed valuation averaging $80,000 over the 18-year period.

3/ To aid in making the comparison, a worksheet for evaluating the options has been developed. See [7].

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