

Transport, Welfare and Externalities.....

Replacing the Polluter Pays
Principle with the Cheapest
Cost Avoider Principle

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NEW HORIZONS IN LAW AND ECONOMICS

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Foreword

Anthony Ogus

As a lawyer who has for many years been working on the interface between law and economics, I have observed with impatience the increasing divergence between academic economics and governmental policy making. Too often economists are too obsessed with the mathematical modeling of their ideas and insufficiently concerned with the applications. This book constitutes a major and refreshing exception to that trend. Dieter Schmidtchen and his colleagues at Saarbrücken have addressed some issues of European transport policy by re-examining the fundamental ideas on which current analysis appears to be based and finding them wanting because they take too narrow a view on the options available.

Some will find this study controversial, not the least because it may be viewed as a major challenge to the sacred cow of the 'Polluter Pays Principle' (although, in what follows, I will suggest that with a given interpretation it is possible still to apply that principle in some form). But few will be able to resist the powerful logic with which the authors seek to answer a simple question: when there are competing demands on a resource, such as the environment, what method of resolving that conflict is cheapest for society?

Their approach draws upon Ronald Coase's pathbreaking paper on social costs, published nearly half a century ago (Coase, 1960). Although Coase was in 1991 awarded the Nobel Prize and although that paper is the most cited article in legal academic journals (Shapiro, 1996), the innovatory character of Coase's reasoning has still been insufficiently appreciated by lawyers and others working in policy-making areas (Ogus, 2006). When there is a conflict of resource uses – for example, one user wishes to use a part of the environment to dispose of waste, while other adjacent landowners wish to have it free from that waste in order that they can use it for other, profitable purposes – Coase's paper is most often invoked to show that the problem can be solved by market negotiations between the interested parties, without other forms of legal intervention. That is true, and it is important, but it is a corollary to the more fundamental insight that is sometimes referred to as the 'reciprocity principle'.

To understand that principle, let us return to the example of pollution by waste matter. While that pollution clearly harms the interests of neighboring landown-

ers, so also, if less obviously, those landowners 'harm' the polluter if through the exercise of their property rights they prevent the disposal of the waste. Coase considers that the position of the polluter and the 'victim' landowners is symmetrical and reciprocal: each wishes to use the environment in ways which are utility-maximizing. There is no a priori reason for assuming that the use which the polluter wishes to make of the environment is less valuable than that of the other landowners. The normative (economic) proposition which flows from this is not necessarily that the physical interference be abated or paid for by the inflictor, but rather that the friction between the conflicting resource uses be relieved at lowest cost, taking account both of the value of the resource uses and the costs of adapting behavior.

Why has the reciprocity principle and its normative implications been neglected by policy makers and lawyers? I think that the answer to this question must lie in some inherent moral notion of corrective justice. Those who actively 'cause harm' are to be treated differently from those who play only a passive role in the sequence of events leading to the conflict of resource use; the behavior of the harm 'inflictors' is deemed to be wrongful and it follows that they should have to pay for the harm. This is, of course, the famous 'Polluter Pays Principle' (Bugge, 1996).

One can acknowledge the force of this non-economic argument but it can be met by two substantial rejoinders. In the first place, in many situations the conflict of resources arises from a complex set of interactions, and it is artificial to select from this multiplicity of factors a single cause of the problem which from a moral perspective should alone attract blame. Ackerman makes the point well: 'the reactive lawyer employs a *narrow temporal frame* in stating his facts, focusing upon the culpability of the individual actions that constitute the obvious disturbance of the peace. In contrast, the Coasean insists upon a *broad temporal frame*, beginning at the moment foresighted men and women might possibly have reorganized their activities to avoid the trouble' (Ackerman, 1984, p. 54 emphasis in original). The generalization can be applied to the case studies which are most expertly analysed in this book. If, from a broader timescale, we take account of the competing demands of natural habitats, human residences, environmental amenities, agriculture, industry and transport facilities, can we say that one of those activities must necessarily have priority over all the others for a single part of the landscape?

Note also how the language of policy making can be used to attempt to escape the logic of Coasean reasoning. Call something (noise and other emissions from the highway?) 'pollution' and immediately the 'Polluter Pays Principle' is invoked. But what is 'pollution'? The merest disturbance from a baseline of environmental purity? Hardly, because there is no such thing as environmental purity, given nature's own degradation. In any event, once it is appreciated that pollution generates benefits as well as costs, it has to be recognized that it is a

relative concept. It depends partly on individuals' perceptions of what is harmful, and this clearly may vary according to time, place and individual sensitivity (Dales, 1968, pp. 18–19). And since pollution abatement is costly, it also reflects individual and community preferences as to resource allocation: in certain areas or countries citizens may prefer lower standards of environmental amenity if that is consistent with, for example, higher prospects of employment. In short, there is no alternative to what the authors of this book refer to as the cheapest cost avoider analysis.

The second rejoinder is more accommodating to the moral perspective. Contrary to intuition, the economic objective of identifying the cheapest cost avoider has no necessary implications as to who is to pay for the avoidance measures. Although we normally proceed on the assumption that, for example, waste generators who engage in pollution abatement themselves bear the cost, legislation may allow for some form of tax concession with the cost then being transferred to general public funds or else to local funds financed predominantly by local landowners. More obviously, avoidance behavior taken by pollution victims can be paid for by polluters. In short, the question of what conflict resolution action should, at lowest cost, be taken is analytically distinct from the question as to who should pay for it (Calabresi and Melamed, 1972).

It follows that the question who should pay can be answered by reference to moral or distributional considerations; less attractively it can also be resolved on the basis of political dictates, for example, those consequent on interest group lobbying. It should be noted that economic considerations are not irrelevant to the choice, as transferring the cost from those engaged in the action to others is itself costly, and that cost will vary according to the complexity of financial arrangements envisaged. Subject to this, not unimportant, qualification, it therefore becomes possible to reconcile the analysis in this book with the 'Polluter Pays Principle': whatever solution to the highway problems encountered in transport policy is found to be cheapest, there are ways of ensuring that the cost is primarily borne by those who are deemed to be the 'polluters' in a given scenario; though whether that will always be the 'fairest' solution is another matter.

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1. Introduction

Globalization in general and European integration in particular have created an economy based on the free movement of people, goods and services. Due to its high quality door-to-door service road transport plays a crucial role in this process. It has become an integral part of any logistics system and thus a vital production tool. But the use of roads does not only contribute to economic growth and prosperity, it also has negative side effects such as noise, the emission of pollutants, and environmental damage. These side effects are labeled 'external effects' ('externalities') and the costs associated with them – for example, costs of congestion, accidents, air pollution, noise and environmental damage – are called 'external costs'. According to a generally held view, such external effects can lead markets to allocate resources inefficiently if they are not properly reflected in the market price of an activity, resulting in a problem usually named market failure. In order to get the prices right, that is to reflect the full social costs of an activity, external effects and the external costs associated with them should be internalized. In very general terms, internalization can be described as an intervention that leads a decision maker to face the full social costs, including both their private costs and the external costs of their actions. This means that costs that would otherwise be 'external' are taken into account by the decision maker and influence their decisions.

There are different ways in which internalization can be achieved: whereas command-and-control policies regulate behavior directly, market-based policies rely on the price mechanism, for example, by imposing Pigovian taxes or charges. Both types of policies are usually based on the same assumptions: the emitter of pollutions causes the external effect and so they should bear its costs. This rationale has a very popular name: the Polluter Pays Principle (PPP).

The present book proposes a paradigm shift for dealing with these so-called 'external costs' in transport. Crucial to the analysis is the insight that external costs are not caused by the polluter alone but are the result of conflicting uses of scarce resources which include the environment. Consequently, polluters are not the only ones who 'cause' external costs; pollutees and the State are cost drivers as well and a priori there is no reason to exempt them from having to contribute to the reduction of external costs. It will be shown that applying the Cheapest Cost Avoider Principle (CCAP) instead of the PPP can lead to substantial welfare improvements.

1.1 CONTROLLING POLLUTION

To understand what the CCAP means and why it is superior to the PPP it is essential to understand the fundamentals of external costs.

In very general terms, externalities are effects of a consumption or production decision made by one agent on the consumption set, utility function or production function of other economic agents which do not work through the price system.¹ Externalities may be positive or negative, that is, they may generate a benefit for or impose a cost on other agents, which is (by their definition) not taken into account by the decision maker. External costs can then be defined as the utility loss (expressed in monetary terms) or the increase in production costs suffered by those other agents affected by the decision. In contrast, private costs are the costs faced by the decision maker. Social costs comprise both private and external costs.

A number of implications follows from this. First, external costs do not exist in a void, but are derived from utility losses or higher production costs of economic agents. For example, effluents pumped into a river are not in themselves an external effect, and do not automatically cause external costs. The increase in production costs of a downstream plant that has to clean up the water before it can be used in its manufacturing process, in contrast, is an external cost, as are the utility losses suffered by those who are (or would be) using the river banks for their recreation.

Second, external effects, and thus external costs, arise only when there are competing uses of scarce resources. Without a downstream factory using the water in its manufacturing process, or swimmers and sunbathers using the river as a leisure facility, there would not be an external effect, and there would not be any external costs.

Third, the fact that there are competing uses of scarce resources also means that reducing the harm to one party inevitably implies harming the other party. Reducing the costs faced by the downstream plant for cleaning river water by reducing the amount of wastewater pumped into the river upstream means imposing costs on the upstream firm, which will have to find other ways of disposing of wastewater, treat the water, or move elsewhere. In other words, externality problems are always of a reciprocal nature: reducing the costs imposed on one party imposes costs on the other. External costs depend on the actions of all of the parties involved – the decision maker as well as those affected by the decision. For example, the extent to which using the river as a deposit of wastewater causes external costs is likely to depend on the production technology chosen by the downstream firm, which in turn affects how much cleaning is required. The utility loss suffered by swimmers and sunbathers might be avoided if they chose a spot upstream, although in this case they would experience higher travel costs.

The last two points are of particular importance, as they highlight that the question of how one should most appropriately deal with external effects is more complex than simply asking how much the party 'causing' the external effect should be paying (and on what particular variables the amount payable should depend). It may be efficient to charge the upstream polluter for pumping wastewater into the river, but not necessarily so. Welfare may be higher if the downstream firm were left to face the cost of cleaning the water that it requires for its production if it can do so at lower costs. Or efficiency may require that both parties pay – the upstream polluter some internalization charge, and the downstream firm some cost of cleaning up the water. Which of these options should be chosen depends on the costs and the effectiveness with which the various parties can reduce the externality.

One can distinguish two approaches to the treatment of the external costs. According to the traditional view, sometimes called Pigovian, external costs should be internalized as prescribed by the PPP. The PPP (European Commission, 1999, p. 5; OECD, 1975) mandates the internalization of external costs by requiring that those who 'cause' external effects bear the costs of avoiding such effects or compensating those who are affected for the damage suffered. The government can accomplish this in one of two ways. It can impose a so-called 'Pigovian tax' on the polluter in order to provide the necessary incentives for the latter to internalize the externality. Alternatively, the government can follow a command-and-control approach and restrict activity levels (for example, through speed limits, or prohibiting certain types of vehicles at specific times from using the road in order to internalize the external costs of road transport) or prescribe the installation of avoidance and abatement devices or alterations in the mode of operation so that external costs are prevented in the first place. In an ideal setting internalization restores the Pareto optimality of competitive equilibria. Pareto optimality requires that no actor can be made better off without making someone else worse off. This implies that there is no waste of resources and that the welfare of society is at its maximum.

By contrast, the modern view, originating from Noble prize winner Ronald Coase, suggests the application of the CCAP.² The CCAP requires that the party which can prevent the damage at the lowest costs should take action provided that the preventive measures cost less than their benefit in terms of the damage they avoid. The CCAP also requires undertaking some form of cost-benefit analysis in order to identify the cheapest cost avoider as well as the measures the latter should apply in order to maximize the welfare of society (Calabresi and Hirschhoff, 1972, p. 1060; Coase, 1960; Demsetz, 1972, p. 28). According to this principle, any preventive measures that cost less than the benefit they produce should be undertaken, whether by the polluter or by the pollutee or the government. Means to achieve maximal welfare can be financial charges, taxes, fines, liability or even command-and-control measures,

such as regulated standards or zoning, as well as investment in infrastructure by the government.

Both principles differ with respect to how the problem is defined, as well as in relation to how measures to solve it are identified and selected.

In the traditional view the problem that has to be addressed is formulated in terms of a market failure arising from a negative external effect. The fact that this effect is not priced implies that the party 'causing' it has no incentive to take it into consideration. Consequently, the price system fails to allocate resources efficiently. For instance, the impact of transport on the environment is not reflected in the pricing of transport, inducing transport activities whose social value is below their true social costs (comprising both private and external costs). It is important to note that according to the Pigovian view there is only one agent who causes the external cost – the provider of transport services. The solution of the problem consists of confronting this agent with the external cost they 'cause', usually called internalization.

As for the identification of measures suited for internalizing the external costs to the transport services two options exist:

- the transport services reduce the harm 'caused' by their activities; or
- they pay for the harm by way of taxes or compensation of the victims.

The final decision consists of the selection of a measure (or a set of measures) which is judged to internalize the external effects most cheaply.

The modern view formulates the problem as a conflict in resource uses between those who seek to use the environment for the provision of transport services and those who seek to use it for residential, recreational, aesthetic or other productive purposes. The problem to be solved by policy makers is not a problem of the internalization of external costs but of how optimally to reduce the conflict over the use of the resource.

Three general options are identified:

- transport services reduce environmental harm imposed on others, pay taxes or compensate 'victims';
- other users of the environment reduce the harm suffered or pay transport services to reduce it;
- the government invests in infrastructure to avoid the occurrence of harm.

The final decision consists of choosing the option or the set of options which are seen to resolve the conflict of uses at the lowest costs.

From a Coasian perspective the terms 'externality' and 'external costs' are therefore misleading. Of course, these terms make perfect sense in a theory in