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Bringing the Environment in from the Cold

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Key words: environmental degradation, environmental externalities,
Pigovian taxation, economic systems, Coasean approach

***Preface:** The aim of this essay is to present an overview of some of the basic concepts underlying the mainstream approach to the role of economics in the analysis of the causes and treatment of environmental degradation. It evaluates the mainstream view depicted by Helm and Pearce and analyses economic externalities in context, conventional economic approaches and imperfect information.*

INTRODUCTION

This paper concentrates on one approach to the problem of environmental degradation, an approach which might be termed "the mainstream". There is an alternative radical approach, the main proponent of which is Richard Douthwaite.

The mainstream view is essentially that, while it is a matter for the physical sciences to assess the present and forecast the future extent of environmental problems, it is in the domain of the social sciences, specifically economics, that solutions should be sought. This is so, mainstream proponents contend, because the underlying cause of environmental problems is human behaviour. Given that human attitudes towards the environment are unlikely to change in the short term, if at all, the task of economics is therefore to internalise the environment within economic calculations. (Helme and Pearce 1991).

The "Mainstream" view

Economists have progressed since the seventies from a view of environmental issues as localised examples of externalities, which had no major effect on the reasonably efficient workings of market economies. The globalisation of these issues together

with theoretical work on their pervasiveness in economic life led to consideration of the possibility of their internalisation. (Helme and Pearce 1991).

Environmental effects are externalities i.e. their costs and benefits are not fully reflected in market exchanges. They represent incomplete or missing markets.

Because environmental assets are not marketable, quantitative methods must be devised in order to bring them within the ambit of meaningful policy measures. The alternative is to leave the existing environmental structure untouched which does not constitute a policy.

Since the information is incomplete, policy initiatives will of necessity be imperfect. Nevertheless, a substantial pay-off to early implementation of policy is expected because of long lags and possible irreversible effects. In short, any coherent action now is better than awaiting an optimal model before intervening. (Helme and Pearce 1991).

Treatment of Environmental Externalities.

Helm et al classify externalities under their institutional contexts, examine some policy instruments for internalising them and deal with the problems of information associated with them.

Institutional Context:

(a) Number of Polluters/Pollutees

There are three cases:

- (1) "One-to-One": This is a special case, the simplicity of which commends it to modellers. The culprit and injured party are easily identified and the damages are amenable to measurement. Solutions may be by way of taxes/subsidies or through negotiation/bargaining.

Regulation and prosecution by the Control Authorities is also relatively straightforward.

(2) "One-to-Many": Chemical spillages and oil tanker disasters are examples. The search for a solution becomes more complex due to the difficulty of measuring the environmental damage and of organising co-operative measures on the part of the victims who are many. Recourse is typically had to the political and regulatory process in such cases.

(3) "Many-to-Many": Ozone depletion and build-up of greenhouse gases are examples. These are referred to as global mutual externalities. The complexities increase due to the ubiquity of sources. Problems of exhaustive identification arise and emissions data is costly to collect. An element of self-regulation may be introduced with inevitable drawbacks. Income effects can also be encountered due to the inelasticity of demand associated with such products as energy and transport, which typically are affected by environmental control costs.

(b) *Jurisdictions:*

Where externalities are confined within national borders, existing taxation and regulatory systems can be adapted to take account of environmental policy. However when environmental problems transcend borders, national systems/laws are ineffective and the will to support international law is suspect. In this instance the benefits to the transgressors outweigh the costs of flouting international convention.

(c) *Economic Systems:*

The emphasis in planned economies is on production rather than consumption. The consequences of environmental degradation will therefore not be accorded the same level of priority as in market economies. The use of policy instruments such as marketable permits and property rights is pre-empted by the nature of planned economies.

The developing world has particular concerns over environmental quality as it relies heavily on the direct use of natural resources e.g. wood for fuel, direct drawing of water. They are also particularly sensitive to natural disasters.

Differences due to economic systems need to be factored into any modelled solution of the environmental question.

Economic Policy Instruments

Conventional Economic Approaches:

Two are examined; the Pigouvian (after Pigou, 1920), which is based on pragmatism and the Coasean (after Coase, 1960), which relies on free market theory.

(a) Pigouvian Taxes/Subsidies:

Pigou sought to internalise "economic" welfare, i.e. that part of general welfare which he considered amenable to cash measurement. He attempted, by means of taxes and subsidies to correct for social costs, which did not form part of the normal market. The Pigouvian approach accordingly is to impose a tax on the polluter and to pay a subsidy to the victim. The disbursement of tax revenue is considered to be a matter for government.

Strengths of the Pigouvian approach are:

1. The recognition that environmental damage involves a cost which must be borne in some form by the generator.
2. There is a presumption in favour of the principle of "the polluter pays". There is no question of the victim paying.
3. A pragmatic approach - each case is taken on its merits.

Weaknesses are:

- (i) It is assumed that there are no other market failures, an unlikely scenario. Pigouvian theory assumes that there will be no distortion of the market as all polluters are affected by taxes and that as a consequence, they will face the true marginal costs of production. This is too simplistic.
- (ii) The approach is informationally very demanding. Perfect information is assumed, e.g., no strategic manipulation of information, no uncertainty about environmental impact.

(b) *Laissez faire.*

The Coasean school asserts that since externalities are the results of the absence of markets and their associated property rights, a market in which all assets were owned would internalise all externalities. If ownership of the "commons" of land sea and air could be established, remedies could be found for environmental degradation through the market or ultimately through the vindicators of private property, the courts.

Strengths of the Coasean Approach:

(i) It proposes a value - free approach to pollution. It is immaterial (economically) whether the polluter (taxes) or the pollutee pays (bribes). This is empirically valid. One method used to discourage pollution by poor nations is by bribes in the form of subsidies or technological expertise?

(ii) It introduces the idea of international co-operation e.g. the idea of inducements to encourage nations to play the game even when it is perceived that there is no advantage to be gained by the new player.

Weaknesses:

1. It envisages well functioning markets and does not address the complexities introduced by monopolies.
2. It does not address the complexities introduced by the presence of multiple parties in the bargaining process. Efficiency is lost due to the likelihood of free-riders and increased transaction costs.
3. It is not clear who bargains for future generations.

Both approaches suffer a common drawback. Their underlying assumptions (that markets function well) are at odds with the intrusion of environmental problems in real world situations.

Imperfect Information.

The real world is devoid of simple full information models such as the Pigouvian and the Coasean. Precise information on the nature of externalities and the costs and benefits associated with possible solutions is lacking.

Uncertainty is present everywhere when we come to consider environmental problems.

This imperfect information (uncertainty) raises some questions.

1. How are individual firms and countries to be inveigled to reveal information which is private to them?
2. Given that future research will increase the flow of information, do we wait for an optimal model/better technology or do we act now? The question of costs and benefits is germane here. Pragmatism suggests that any decision should be based on such analysis.
3. Cost-benefit analysis raises a further question. How do we scientifically model uncertainty? How do we factor in a subjective expected utility loss, a risk preference and the marginal costs of pollution control? (Helm and Pearce 1991).

Since the assumption of such factors is highly questionable in the complex area of global externalities, parameters within which the problems should be modelled should be sought by way of best and worst case scenarios.

SUMMARY

Helm and Pearce favour a scientific analytical approach towards externalities. They examine the assumptions of simple modelled solutions and expand on these by focussing on the complexities introduced by institutional contexts, jurisdictions, economic systems and imperfect information. They favour pragmatic attempts at solutions and are confident that these attempts are the bailiwick of economists. On the other hand Douthwaite adopts a holistic approach to the same problems.

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