PROPERTY RIGHTS AND THE ENVIRONMENT

Lata Gangadharan
Department of Economics, University of Melbourne, Australia

Pushkar Maitra
Department of Economics, Monash University, Clayton, Victoria, Australia

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Summary

The global commons are resource domains over which no particular individual or nation has private control. Historically the resources of the global commons have remained outside management and property regimes because of the technical inability of humans to exploit them significantly and because of their geophysical properties. This is no longer the case. However, continued problems with defining adequate property rights of common property resources has led to severe overexploitation. This article critically discusses the solutions that have been proposed to solve the problem of free-riding and overexploitation of common property resources.

1. Introduction

The global commons are legally defined as "resource domains to which all states have legal access." This includes the high seas, the atmosphere, and space. More generally, this definition is expanded to include domains that do not fall within the jurisdiction of any one government and therefore includes such diverse resources as Antarctica, mineral reserves straddling national boundaries, migratory wildlife, and fish stocks. Historically, the resources of the global commons have remained outside management and property regimes because of the technical inability of humans to exploit them significantly and because of their geophysical properties. This is no longer the case. Human beings have already caused the extinction of many species of migratory wildlife species such as the passenger pigeon and the Atlantic gray whale, and have depleted the stocks of many others to the point where their existence is in jeopardy.

It is important to recognize that no two resource domains are the same in terms of their physical characteristics or how they can be exploited. However, we can attempt to

attach an economic, social, and cultural value to all of them. The most readily accessible of all the truly global resource domains, and the most difficult to attach value to, is the atmosphere. Currently the international community is struggling with how to attach an economic value to a resource that possesses a value only in the sense that we can negatively affect it. As we continue to degrade our environment and our populations continue to grow at exponential rates, so the pressures on our global commons increase. How are we to regulate the use of the global commons if, by very definition, they are domains not under the jurisdiction of any one national or supranational body? To date three possible regimes have been proposed for the regulation of the global commons. Some people argue that reducing the global commons to private property is the only means of assuring effective regulation. This assumes that if a resource is shared by a variety of users, they will exploit it to maximize their personal benefit regardless of the consequences for the resource itself. The solution most favored by policy makers is an extension of national authority. Many nongovernmental organizations (NGO) propose that the global commons should be managed according to the same principles a small community uses to manage its common lands. This approach assumes that individuals, companies, nations, and international organizations would all act in the best interests of the resource.

Essentially the problem arises because property rights are not clearly defined in the case of global commons. That leads to the question: how do we define property rights? This article starts by surveying the literature on property rights. Then follows a discussion of the forces that govern particular forms of ownership rights. Several idealized forms of ownership must be distinguished: communal ownership, private ownership, and state ownership. The issue of global commons is discussed next. In the final section we focus on environmental regulation given that, in the case of the environment, property rights are not well defined. It has been shown that in this sort of situation international trade can actually make matters worse.

2. Property Rights

"The average American eats 73 pounds of beef, 59 pounds of pork, and 63 pounds of chicken in a year yet concerns are never voiced that this consumption will drive cows or pigs or chickens to extinction. Relatively few Americans eat whale meat, yet in countries like Japan, whale meat is considered a delicacy. In 1986, amid fears that whales were being hunted to extinction, an international convention passed a moratorium on all commercial whaling. Why does the market system work to assure plenty of cows and pigs and chickens but threaten to exterminate certain breeds of whales?" (J.E. Stiglitz)

One way of looking at this problem is through property rights. Cows, pigs, and chickens are usually the private property of farmers, who have an incentive to replenish stocks. Whales are not the private property of any individual or country. Therefore, despite the fact that there is an incentive to hunt whales, nobody has the responsibility of ensuring that there is no depletion in the number of whales. This problem has been termed the "tragedy of the commons." Increasing attention is being given to the subject of property rights and to a somewhat different approach to the analysis of social problems that originate in scarcity.

The purpose of the property rights approach is to build on and merge with the standard theory of production and exchange in order to obtain an expanded scope of its validity. It argues that the purpose of trade and production is to exchange bundles of rights to do things with goods that are exchanged. Thus the value of the goods traded increases and the terms of trade improve with increases in the degree of property rights in those goods. It follows that the scope and content of property rights over resources affects the way people behave in a world of scarcity.

Since the same resource cannot simultaneously be used to satisfy competing demands, conflicts of interests have to be resolved. Thus the structure of property rights in a society at some point in time becomes crucial. There is evidence that the allocation of resources is constrained in specific ways by prevailing property rights assignments. What are owned are rights to use resources and not the resource itself. The strength with which rights are owned can be defined by the extent to which an owner's decision about how a resource will be used determines its use.

Property rights are an instrument of society and they derive their significance from the fact that they help individuals form reasonable expectations of their dealings with others. These expectations find expression in a society's laws, customs, and mores. Property rights specify how people may be benefited and harmed and therefore who must pay whom to modify the actions taken by individuals. Thus property rights have a close relationship with externalities. An externality occurs whenever the activities of one economic agent influences others in ways that are not taken into account by market transactions. Internalizing refers to a process whereby these effects have to be considered by all the individuals involved in the action. This could be done by a change in the ownership of rights. The concept of property rights can therefore help internalize externalities. However, such a process involves costs that have to be taken into account.
Not only is it important to have a structure of property rights, it is equally important to ensure that these rights are enforced. This is where the legal system comes in. One of the purposes of the legal system is to establish the clear delimitation of rights, on the basis of which the transfer of rights can take place through the market. It should be possible for one user to buy out the rights of the other users to obtain exclusive usage. The use of a piece of land simultaneously for growing wheat and as a parking lot would produce chaos. To avoid this situation it would be important to create property rights to allow exclusive use of the land.

The advantage of establishing exclusive rights to use a resource when that use does not harm others is easily understood. However, the situation changes when actions may harm others directly. Consider the example of a doctor and a confectioner having shops next to each other. The confectioner's machine disturbs the doctor in her work. The doctor takes the matter to court and the confectioner is made to stop using his machine. This example brings out the reciprocal nature of the relationship that tends to be ignored while using Pigou's approach. The traditional (Pigouvian) approach has tended to obscure the nature of the choice that has to be made. The question is commonly thought of as one in which A inflicts harm on B and the issue is what should be done to restrain A. This is not entirely correct, however. What we are dealing with is a problem of a reciprocal nature: in the process of avoiding harm to B, we harm A. The real question then is: should A be allowed to harm B or should B be allowed to harm A? The problem

is how to avoid more serious harm. Another example is straying cattle destroying crops on neighboring land. If it is inevitable that some cattle will stray, then an increase in the supply of meat can only be obtained at the expense of a decline in the supply of crops. The nature of the choice is not very clear: do we prefer meat or do we prefer crops? It is impossible to know the correct answer without knowing the value of what is obtained and the corresponding opportunity cost.

It has been argued that the failure of economists to arrive at correct conclusions about the treatment of harmful effects cannot be ascribed to a few slips in analysis. The failure stems from basic defects in the current approach to problems of welfare economics. What we need is a change in approach. Pigou's analysis in terms of divergences between private and social products concentrates attention on particular deficiencies in the system and tends to nourish the belief that any measure that will remove the deficiency is desirable. This diverts attention from those other changes in the system that are inevitably associated with the corrective measure, changes that may well produce more harm than the original deficiency. Instead, it would be desirable to use an opportunity-cost approach when dealing with the question of economic policy and to compare the total product yielded by alternative social arrangements. These views were developed by Coase and form the basis of what is known as the Coase Theorem.

Once the legal rights of the parties have been established, it is possible to negotiate and modify those arrangements. In the example of the doctor and the confectioner described above, we can have two cases: (1) the property right is given to the doctor and the confectioner stops producing candies, or (2) the property right is given to the confectioner and the doctor can strike a bargain by which the confectioner waives his right.

There are costs associated with any market activity per se. Such costs are termed transactions costs and in some market transactions such costs can be significant. In a world with zero transactions costs, private negotiations or market transactions will always lead to an efficient outcome as long as property rights are well defined and this outcome will be independent of who owns the right. The exact definition of legal rules has only distributional consequences. In reality, however, transaction costs are not zero. When there are costs associated with striking bargains, we have to compare those costs with the potential allocational gains from striking a bargain. Only in situations where those gains exceed the necessary bargaining costs will Coase-type results hold.

When bargaining costs are high, externalities will distort the allocation of resources and the assignment of property rights can have a major effect on that allocation. If, for example, major industries are given the right to spew noxious fumes into the atmosphere, an efficient allocation is unlikely to emerge since the costs of bringing together into an effective bargaining unit all the individuals harmed by such fumes are probably quite high. Nevertheless, development of the Coase Theorem and later research based on it has had a significant impact on the way economists think of the relationship between externalities, property rights, and the efficient allocation of resources.

The concept of property rights can be extended to various fields. One could think of the problem faced by a financially weak, independent inventor when selling a valuable but easily imitated invention for which no property rights exist. Most independent inventors cannot successfully create an organization to take commercial advantage of their invention, so they have to rely on another party. This involves a production contract, a licensing arrangement, or the outright sale of the invention. Thus the inventor's ability to make profits of capture rents depends on the market value of the invention, property rights, and the information of the inventor. When the inventor can rely on patents or other mechanism to protect her intellectual property rights, then theory suggests that the inventor can appropriate a substantial fraction of the value of the invention. But if property rights are weak and nonexistent, then the inventor's ability to capture rents are limited. Also, reliance on laws concerning theft of ideas does not work since buyers employ strategies to avoid legal challenges. Finally, some forms of intellectual property rights—such as new product concepts and management ideas—are inherently difficult to protect.

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Biographical Sketches

Dr. Lata Gangadharan completed her Ph.D. in 1997 at the University of Southern California, Los Angeles. Since then she has been employed at the Department of Economics, University of Melbourne, where she is a senior lecturer. Her main research areas are environmental economics and experimental economics. She has published many papers in these areas in referred journals. Her work is recognized internationally. She often serves as an expert on committees involved with environmental issues. She was

invited to present a paper in a workshop on global warming, organized by UNESCO in Milan. She is currently involved in designing markets in pollution in the state of Victoria in Australia.

Pushkar Maitra is a senior lecturer in the Department of Economics, Monash University, Australia. He completed his Ph.D. in economics from the University of Southern California, Los Angeles, in 1997 and since then has held faculty positions at the University of Sydney, Australia, and Monash University. His primary areas of research are development economics, economic growth, and population economics. He has presented papers at a number of well-known general and field conferences in the United States, Australia, India, and Europe and has been invited to present seminars in several universities in those countries. He has served as a referee for a number of respected international journals and was on the organizing committee of the 27th Conference of Economists held at the University of Sydney in September 1998 and is a member of the organizing committee for the Econometric Society Australasian Meetings to be held at Monash University in 2004.