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***The Tragedy of the Anti-Commons: A New Problem. An
Application to the Fisheries.***

WP 016/2007/DE/SOCIUS

WORKING PAPERS

ISSN N° 0874-4548



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Abstract

The operation and management of common property resources (“the commons”) have been exhaustively examined in economics and political science, both in formal analysis and in practical applications. “Tragedy of the Commons” metaphor helps to explain why people overuse shared resources.

On the other side, Anti-Commons Theory is a recent theory presented by scientists to explain several situations about new Property Rights concerns. An “anti-commons” problem arises when there are multiple rights to exclude. Little attention has been given to the setting where more than one person is assigned with exclusion rights, which may be exercised.

We analyze the “anti-commons” problem in which resources are inefficiently under-utilized rather than over-utilized as in the familiar commons setting. In fact, these two problems are symmetrical in several aspects.

Key words: Anti-Commons Theory, Property Rights

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1. Introduction

Commons are an important matter when we intent to analyze resources on Earth. Since the publication of “The tragedy of the commons” (Hardin, 1968) that scientists have studied this issue in several areas, such as the extinction of species, prices externalities, or oligopoly behavior. All of these situations represent an inefficient use of the resources.

Frequently, when common resources are exploited, there is not a central decision maker and the access to these resources (and the resulting right to use them) is not well defined.

So, the individual appropriation of a common resource results on the individual privatization of net benefits, those which come from that appropriation. Each time there is an individual appropriation of a common resource, an externality results from that appropriation. This externality will affect each one of all the other users of the common resource, because just a smaller amount of the resource will remain available for all the agents that make use of it. Because there is not a mechanism to balance social benefits and costs, agents have an incentive to overuse the commons. In practice, if there is not a cost associated to the exploitation of the resource (except those with externalities), there are private benefits resulting from taking off all the economic value available from the existing resource, until it completely collapses.

In fact, the commons got more and more important for scientists in the last decades because problems of overexploitation of resources have considerably increased.

Consequently, international organisms related with commons have been searching for good solutions for the exploitation of natural resources and for the environment.

In fishing area, commons have long been a central theme, as well. The problem of over-fishing has long been claiming for good practices coming from international

cooperation and coming from a preserving approach on the processes of decision making of international, national, regional or local resource management institutions.

In addition, the interdisciplinary research related to common resources has become extremely important through time, because commons are a very complex theme and, in fact, they need the contribution of several areas of knowledge.

In the last years, several ideas about a new problem around property rights have emerged. “Anti-Commons” theory has appeared representing the idea of an excessive partition of property rights. Too many rights of exclusion and a reduced level of utilization of the resource characterize an “anti-commons”.

These features are opposed to those which characterize the commons. Some authors have pointed out the real danger of breaking out property rights too much. The notion of “anti-commons” was presented by Michelman (1982), who defined it as “a type of property in which everyone always has rights respecting the objects in the regime, and no one, consequently, is ever privileged to use any of them except as particularly authorized by others”. This definition of “anti-commons” makes evidence of the lack of efficiency in several situations in which each one of several owners with property rights over a given resource has no effective rights to use the resource (and consequently, each one has the right to exclude other agents from the utilization of the resource).

In fact, this new line of investigation seems to be an important contribution to study property rights. Heller (1998) revitalized the concept of “anti-commons”, which became a powerful tool for the development of property theory. Heller (1998) and Heller and Eisenberg (1998) have developed the idea of the “tragedy of the anti-commons” and have created a “mirror effect” for the classical problem of the “tragedy of the commons”. Their

proposal represents precisely the idea that too many property rights lead to a sub-exploitation (a sub-utilization) of a given resource. Buchanan and Yoon (2000) have created a model, in which commons and anti-commons are viewed as symmetrical. They used the same framework for the analysis of both theories.

This notion of “anti-commons” has been very relevant when intellectual property rights are studied. A very important application has been made to biomedical investigation, for example, when patents¹ of genes fragmentation lead to the patent stacking, taking out many patents for different aspects of a single innovation, and thus forcing several royalty applications and payments. Indeed, a very large number of licenses is frequently needed for the use of genes fragments. These requirements complicate whichever applications investigators intend to do with them. Consequently, patents of genes become underused for investigations and “tragedy” is coming up. This means that resources are not used enough to get the best results.

2. The Theory of the “Anti-commons”: a new theory for the Property Rights

As we have seen, property rights for commons are under-defined. The lack of property rights implies that no one may exclude others to access to a given resource. The existence of many agents to use a given resource, in these conditions, causes an inefficient level for the resource use and causes a special motivation for agents over-use the resource. The real level of use for the resource will take place at a higher level compared with the optimal level for the society as a whole.

¹ Patents give to owners exclusive rights to their inventions or ideas for 20 years from the filing date. The principle is to allow inventors time to get back their investment costs in exchange for a public description of their knowledge, thereby revealing technical advances to competitors and the general public and avoiding duplicated efforts. Biological inventions are patentable if they meet the standard requirements for all patents: they must be novel, useful, not obvious, and described sufficiently for others to reproduce.

On the opposite side, when several owners of a resource have, each one, the right to exclude others from the use of a scarce resource and no one has the full privilege to use it, this resource may have a very limited and unsatisfactory use. This is the problem of the “tragedy of the anti-commons”: the resource may be prone to under-use.

After an “anti-commons” emerge, its particular passage process to the private property sphere is long and extremely slow, due to the properties inherent to “anti-commons” and to the difficulties existing for overcoming the “tragedy of anti-commons”.

As a consequence of all this, it is necessary to make an important reflection about the definition of property rights to overcome several important aspects when scarce resources are exploited. In deed, we can see that not just the commons lead to the tragedy. When there are too many property rights and too many rights of exclusion, tragedy seems to be the end result, as well. Too many owners have the right to exclude others but, in fact, no one of them, have the privilege to use it suitably. An insufficient use is the corollary for this situation.

3. Property fragmentation and externalities.

When different agents may exclude others from a scarce resource, their predisposition is for not authorizing that others may use the resource. Each one of all of the co-owners of a scarce resource, in fact, can not use the resource if he or she is not authorized by the other co-owners. This behavior leads to an inefficient use of the resource. If the competing agents control the entry on the exploitation of a given resource and if they exercise their rights individually and act under individual conditions of competition, they will use effectively the exclusion rights even when the use of the resource by an individual leads to a situation of net benefits for the society, as a whole.

This is the danger of the existence of excessive property rights over a resource in the context of the “anti-commons” property regimes. There is a lack of conformity between use and exclusion rights and it is this situation that is necessary to understand and to overcome.

Considering an economics point of view, we would say that “tragedy of the anti-commons” would result from the fact that resources are not exploited even for situations in which the marginal productivity is positive. This happens because the different owners of the exclusion rights do not capture completely the costs and the external effects of their own decisions of excluding others from the utilization of a resource. In reality, the “tragedy of the anti-commons” appears just because the several agents who hold the exclusion rights do not fully internalize the cost created by the enforcement of their right to exclude others.

In general, “anti-commons” externalities have two sources. The first one refers to a situation in which externalities are static or current. The exercise of a right of exclusion owned by one agent reduces or eliminates the value of similar rights held by other agents. We can think, in terms of prices theory, that the existence of several exclusion rights has a cross price effect. The other source stands that the under-use of productive resources may create dynamic or future externalities, because underutilization of this kind of resources leads to a set of consequences in the future. In the “anti-commons”, as Schulz, Parisi and Depoorter (2002) say, the co-owners’ right of use is compressed, and potentially eliminated, by an overshadowing right of exclusion held by other co-owners.

4. Modeling “anti-commons” problems

Schulz, Parisi and Depoorter (2003) present a general model which permits us to distinguish between the simultaneous cases and the sequential cases in “anti-commons” tragedies. As the authors say, the reality may present situations that combine characteristics of the two categories. Anyway, it is important to consider the two situations separately.

For the first of these two cases, they consider that exclusion rights are exercised at the same time, independently. This involves several agents linked in a coincident relationship, such as multiple co-owners with cross-veto powers on the other members’ use of the common resource.

In the sequential case, exclusion rights are exercised in consecutive stages, at different levels of the value chain. The several owners of the exclusion rights exercise their own rights in a succession way. Each agent may be involved in a hierarchy and each one may exercise its own exclusion right or veto power over a given proposition (see some examples about simultaneous and sequential anti-commons tragedies in Schulz, Parisi and Depoorter, 2003).

5. Some well-known examples of “anti-commons” problems

Some important and elucidative examples can be given. Heller (1998) presents an example about the transition to the market institutions in contemporary Russia. In fact, Heller discusses why many storefronts in Moscow are empty while street kiosks in front are full of goods. Those storefronts got too much owners, each one of them with the right of exclude the others to use it and so, storefronts got prone to the under-use. The storefronts represent an important example how the “tragedy of the commons” may occur

and it permits to explain the way how property rights may lead owners to under-use a scarce resource. All the owners have the privilege to use the resource (because all of them are co-owners), but each one of them has the right of exclude the others (the co-owners or other agents, whichever they are) from the use of the resource. Consequently, the resource is under-used. In fact, no one of the owners has, in practice, an effective privilege to use the resource.

Using the theory of “anti-commons”, Heller and Eisenberg (1998) explain how patents may be dangerous for productive projects. They say that each patent holder has a potential veto over the innovations of others and that the tragedy may occur when these property rights are too strong and when too many patent holders may block productive activities. The pursuit of private gains leads to a loss of social welfare. Actually, “tragedy of the anti-commons” is a consequence of the existence of too many rights of exclusion and too low levels of utilization of the resource.

In some regions of Portugal, the excessive partition of the property of land leads to the under-use of this land. In fact, several agents that have inherited a little piece of land, for them all, will not have any kind of interest in use it. Anyway, no one has an effective privilege to use it and all of them have the right to exclude the others from the use of the land. Consequently, the land will be under-used, unless temporarily one of the owners gets a special license from the others to use it. If this occurs, it does not diminish the theoretical effects of the “tragedy of the commons”. The land is prone to the under-use and the effect is an inefficient use of the land.

6. Using “Anti-commons” theory to explain some new dilemmas on fishing sector

The classical theory of the “tragedy of the commons” explains the reasons why sea fisheries are prone to over-exploitation (see Hardin, 1968). However, Gordon (1954) had already examined the problems of common resources in the 50s.

The emergence of individual transferable quotas (ITQs) would potentially allow overcoming, even partially, the serious problem of over-fishing for several species in several parts of the world. Anyway, the enormous enthusiasm around ITQs has given place to the appearance of the problem of the “anti-commons”. Some nations have tried to avoid the “tragedy of the commons” in sea fisheries by regulating the activity, decade over decade. Reducing fishing seasons, restrict open areas to fisheries, limiting the use of gears or reducing the power and tons for ships were just some measures to avoid tragedies to species. The truth is that these practices many times did not reduce over-fishing for the species that governments intended to protect. Fishing race and massive discards, frequently, continued.

TACs (total allowable catches) are fixed each year by fishing management authorities. Each fisher has a part of the TAC to fish, representing his own individual quota. Theoretically, with this procedure, each fisher may use his quota when he likes and fishing race may come to an end (see Leal, 2002a). Meanwhile, quotas may be transferable and this procedure may lead to situations in which the quotas owners can adjust the dimension of his fishing operations buying or selling quotas or even just leaving the fishery and move the quota from the market.

Many nations have been using this kind of measures (programs of individual transferable quotas) to manage fishing resources in their waters. These programs

contributed to improve fishers' rents, to improve the quality of products, to reduce the excess of quotas and to eliminate eventual catches that exceed TACs (see Alesi, 1998; see Repetto, 2001 and Wilen and Homans, 2000, as well).

Alaska's Halibut allows us to study the effect of the existence of ITQs and, additionally, to study the consequences in terms of the "anti-commons" (see Leal, 2002b). In fact, this specie got overexploited and authorities implemented several measures to reduce catches. First, fishing seasons were reduced. At the beginning of 90s, fisheries were opened just for two or three short periods of about 24 hours, per year. Consequently, fishing race became the solution for fishers, who tried to get the maximum fish as possible, throughout the available time for fishing. In fact, results got different than the expected ones for worse. However, after the implementation of individual quotas in 1995, fishing seasons became larger and fishers could exploit this resource for around 8 months, per year. Sales increased and prices got higher (see GAO, 2002). Meanwhile, catches got smaller than TACs and fleets excesses were reduced.

Nevertheless, individual quotas excess may lead to sub-exploitation of the resource and Alaska's Halibut is, in fact, a case that must be studied to see the consequences of too many existing fishing quotas. Authorities have implemented rules to protect small fishers. They did not authorized fishers to sell their quotas if they were very small. Consequently, these quotas got unexploited, because they were not profitable for their owners. Halibut got underexploited. Authorities had to change rules for this fishery. We can see now that ITQ promote important solutions for the "tragedy of the commons" but they may create conditions for a new situation of "tragedy of the anti-commons".

Some other examples may be presented. For example, Leal (2002b) shows how Alaska's crab may be prone to under-use if fishers are forced to sell their catches to a little number of companies, as it was the case. Low prices lead to situations in which fishers under-use their quotas because they got unprofitable. As a consequence crab got under-exploited.

Another example can be presented in the area of aquaculture. Portugal has too many entities to analyze projects of aquaculture. Rules and procedures are so many that projects are approved with long delays². As a consequence, resources get under-used.

7. Discussion. Is there a new problem or a new way to solve old problems?

New situations have emerged. They have appeared from the real world or from new methodologies to study the reality. In fact, some questions may be posed.

First, we may wonder if this kind of problems results from new situations with new questions and if these problems need a new kind of solutions. Second, we may wonder if these problems have some kind of new implications, representing problems of old instruments like ITQs, which advantages or disadvantages have already been identified. Third, is this an alternative way to study these matters or is this just a problem of economies of scale?

Probably, the new problems concerning to "anti-commons" would need a new kind of solutions. They possibly need new ways for intervention of governments about these situations. Authorities probably should control and restrict, through legislation, behaviors of agents that lead to the "anti-commons". As we have seen, "anti-commons" generate an

² Other countries have similar problems in this kind of projects.

inefficient use for resources and the consequent sub-utilization should, in fact, be controlled and authorities should have this organizing function. We do not defend a new kind of interventionism for governments but just a way to adjust and to moderate agent behaviors through some creative rules.

To end our analysis, we should say that the concept of “anti-commons” may be increasingly discussed in order to clarify its boundaries and to implement a more precise meaning for it in the large context of the property rights.

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