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"CRIME AND PUNISHMENT": THE ETHICAL FUNDAMENTS IN THE CONTROL REGIME OF COMMON FISHERIES POLICY

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ABSTRACT

Monitoring and enforcement in fisheries have been largely neglected in the study of management in this field. A formal model of fisheries law enforcement is presented to show how fishing companies perform their activities and how fisheries policies are affected by costly, imperfect enforcement of fisheries law. The model developed combines standard Economics of Fisheries analysis (Gordon/ Schaefer model) and the Theory of "Crime and Punishment" of Becker. The Common Fisheries Policy (CFP) is discussed. And in the model presented is considered its possible use.

Key words: Ethics, Fisheries, Enforcement, Common Fisheries Policy

1. INTRODUCTION

Resources and tragedies are very closely related in the fisheries' literature. When people can access to a resource freely, usually the resource is overexploited and tragedies may happen. An ethical problem gets evident with its formulation. For transposing this kind of dilemma, agents are confronted with rules. Sometimes rules are violated and punishment is necessary. It is what happens with fisheries problem in which overexploitation is very usual and it is necessary to preserve species form extinction.

Public enforcement of law, that is, the use of public agents to detect and sanction violators of legal rules is an obvious important

theoretical and empirical subject for Social Sciences. First literature on the subject of law enforcement dates from eighteen century: Montesquieu, Beccaria and Bentham. Curiously, after the sophisticated analysis of Bentham, the subject of enforcement “lay essentially dormant in economic scholarship” (Polinsky and Shavell, 2000), until the influential article of Gary Becker (1968), “Crime and Punishment: An Economic Approach”.

2. CRIME AND PUNISHMENT IN FISHERIES ECONOMICS

In the context of Fisheries Economics, the problem of crime and punishment can be seen as an externality arising when exclusive property rights are absent (Cheung, 1970) and that absence depends on, among other things, the costs of defining and enforcing exclusivity.

Efficiency considerations, don't dictate, only by itself, the choice of a certain property rights regime. In some systems of property rights (as it is the case of “common property") the realignment of the property rights can have a very high or even prohibitive cost. The establishment and enforcement of a system of rights depends, of course, on efficiency considerations, but also on the individual preferences and the ethical, political and social realities in a community. These include the lack of means (or other insufficiencies) of the administration to control and enforce the execution of legal rules (Demsetz, 1967).

Monitoring and enforcement considerations have been largely ignored in the study of fishery management. This chapter explores this issue with a formal model of fisheries law enforcement to show how fishing firms behave and fisheries policies are affected by costly, imperfect enforcement of fisheries law. This model combines standard Economics of Fisheries analysis (Gordon/Schaefer model) with the Theory of “Crime and Punishment” of Becker.

The conclusions of the model are used to discuss ethical reasons in the design and reform of the control and monitoring regime of the Common Fisheries Policy.

By definition, anything that is an infringement of the law is illegal. Illegal fishing therefore covers a wide range of behaviour, which

can take place at three levels for members of the European Union: national, Community and international.

Illegal fishing has always existed, but, in recent decades, there has been a sharp rise in violating activities, due to technical progress: motorization, freezing techniques, improved gear, new forms of stocks detection and information. This process was majored by the evolution of the Law of the Sea, a "creeping jurisdiction" process which seems to have given an end to the principle of open access.

Obviously it's impossible to quantify or qualify infringements. They are known to take place at all levels and take different forms at different times; some violations are detected but many remain unnoticed. Infringements take the traditional forms of fishing over the quota or using non-permitted mesh-size, but are also in situations of non-permitted by-catches or transhipment; even in the fake world of convenience flags. Illegal fishing occurs at all stages of fishing activity. A large number of offenders are fishermen motivated by various interests, the fundamental being the lure of short term profit. But fishermen are not the only ones involved. Fraud can take place along the entire channel. Note that the possibilities after landing are tremendous.

National administrations sometimes bear part of the blame. Every state is responsible for enforcing the existing rules and monitoring activities (policing its territory, conducting controls and penalising offenders). Its inefficacy in controlling activities is the reason of a lot of enforcement problems.

3. THE FUNDAMENTAL RESULTS OF THE THEORETICAL ANALYSIS

The main basis to have in mind in order to perform a theoretical analysis of crime and punishment are the following:

- First, the model sustains a rule of optimal behaviour for a rational ("homo economicus") operator:

For a given stock size x, the firm sets its catch rate at a level in excess of its quota, where marginal profits equal the expected marginal penalty. If there were no penalty for fishing beyond legal

quota, or if there were no probability of being detected and convicted, the firm would set its catch at the open access catch rate. If the expected marginal penalty schedule lies above the marginal profit schedule for all catch level above the legal quota, the firm's optimum catch equals its quota. So, firms with no quota have an expected net gain for entering, illegally, in the fishery, if their expected marginal penalty schedule begins below their marginal profit schedule.

- Second, it can be concluded that the presence of costly, imperfect enforcement results in a smaller optimal stock size than otherwise, and, similarly, higher enforcement costs result in a lower optimal stock. The rationale is not difficult to follow. Assuming that some kind of quota system is in effect to ration access, enforcement activity would involve monitoring compliance with these quotas and assigning penalties on those found in violation. If the quotas were so large as to be consistent with free access equilibrium, enforcement costs would be zero because no enforcement would be necessary to ensure compliance. Moving away from free access equilibrium increases both net benefits and enforcement costs. For this model, as the steady-state population size is increased, marginal enforcement costs increase and marginal net benefits decrease. At the efficient population size, with enforcement costs, the net marginal benefit equals the marginal enforcement costs. This necessarily involves a smaller population size than the efficient population size ignoring enforcement costs, because the latter occurs when the marginal net benefit is zero (Tietenberg, 2003).

4. THE COMMON FISHERIES POLICY

The conclusions of the model are used to discuss the design and the reform of Common Fisheries Policy control regulation. The main objective of the Common Fisheries Policy (CFP) is to provide sustainable exploitation of fish resources. In order to ensure the achievement of this objective, Community rules shall be applied, in an effective and uniform manner. The effectiveness of the Common Fisheries Policy depends on the compliance of the various operators concerned, with the CFP rules. Member States are responsible for

ensuring the correct application of the CFP rules on their territory and in the waters under their jurisdiction. They must also ensure that all vessels flying their flags comply with the rules. To ensure the equity and fairness of control and monitoring throughout the Community, Commission inspectors oversee the activities of the national enforcement services and report to the Commission.

This Code of Conduct reflects the CFP philosophy of intervention. This philosophy has always insisted in the *ethical* framework of such a system of Regulation. In its early days, the Commission put the problem of control in terms of ethical reasons:

"It's the only way to assure that the sacrifices of some member states in the recovery of the stocks are not in vain because of the irresponsible action of others" (Comissão Europeia, 1976).

Since 2003, Common Fisheries Policy (CFP) is developing a process of Reform. The Control and Monitoring Regime of common fisheries is one of the most important subjects where this reform takes place.

Applying theoretical analysis to the guidelines of CFP reform, the following remark may be suggested:

- Implementing Community policies in Member States is never easy, especially when myopic individual interests do not match with long term collective interests. This is the case in fisheries. Fishermen do not have greater propensity to altruism than the rest of the society; so, they are little inclined to refrain catches for the sake of a clear conscience, if they think their competitors are less scrupulous (European Comission/ DGF (2000)). Without a clear and effective policy of control and enforcement, the Commission is certain that the "Tragedy of the Commons" will result and that over-fishing and overcapacity will occur.

5. THE CFP AND THE IMPLEMENTATION OF PENALTIES

According to Becker (1968), individuals rationally decide whether or not engage in criminal activities by comparing the expected returns to crime with the legitimate business. The analysis of the

Commission proposals seems to give a special attention to the increase of the probability of detection as a means to deter criminal behaviour and increase compliance with regulation. Introduction of severe penalties is not in the first line of measures to control illegal fishing. Of course they are considered and an important effort to clear define the legal procedures to penalise the violators, is made. But they are not in the centre of the policy.

The reasons stand, perhaps, in this: The Commission believes that the financial support will guarantee the indispensable means of surveillance and control to the Member States. This will increase the deterrence capacity of control in Member States, in uniform manner, and increase transparency and trust between partners.

The Commission also knows that legal administration, in the Member States, have significant differences and that judicial machinery has a great inertia. The capacity and efficiency of Member States justice is not only a question of financial means devoted to his mission. It has also cultural and historical roots. It's virtually impossible to put all the Member States in uniform position in terms of speed and severity of penalties application.

6. A CRIME AND PUNISHMENT MATHEMATICAL MODEL

Law and ethics are very closely related. Law is the first pillar for a "rational" exploitation of commons' resources and the support on the preservation of resources, as it is the case of fishing resources. Illegal fishing has been traditionally a big problem on this matter. Therefore it covers a wide range of behaviours. Any violation of national laws or international regulations, or any failure to comply with the recommendations of international bodies, especially those of Regional Fisheries Organisations, constitutes an infringement. The fundamental problem in fisheries management is to obviate the tendency towards overexploitation of the resources under common waters in the regime of open access. Regulation methods used to curb this tendency of overfishing and overcapacity includes gear restrictions, area and seasonal closures, TACs, ITQs, limiting entry and other forms of reducing fishing effort (Clark, 1980; Coelho & Lopes, 2000).

Public enforcement of law, that is to say, the use of public agents to detect and sanction violators of legal rules, is important for fighting illegal fishing (Polinsky & Shavell, 2000).

A formal model of fisheries' law enforcement is introduced to show how fishing firms behave and fisheries policies are affected by costly, imperfect enforcement of fisheries regulation (Sumaila, Alder & Keith, 2006; Sutinen & Anderson, 1985). This permits to give a very definite idea about the ethical problem created in such a situation.

This model combines standard Gordon /Schaefer fisheries model (Clark & Munro, 1975) and the theory of crime and punishment of Becker, 1968.

Let's assume that, whatever means are applied to reduce catch rates, any catch level above the level of the permitted quota for a certain fishing, q^*, is illegal. If we suppose a system of individual non-transferable quotas, the amount of the individual firm catch above its quota $(q_i - q_i^*)$ is illegal.

If detected and convicted, a penalty fee is imposed on the firm in an amount given by f,

$$f = f(q_i - q_i*), \text{ where } f > 0, \text{ if } q_i > q_i^*;$$

and

$$f = 0, \text{ otherwise;}$$

being

$$\frac{\partial f}{\partial q} \geq 0;\ \frac{\partial^2 f}{\partial q^2} \geq 0;\ \forall\ q_i > q_i*.$$

An individual firm's profit before penalty is given by

$$\Pi^i\ (q_i, x) = pq_i - c^i(q_i, x),$$

where p denotes the price of fish, x is the size of fish stock and $c(.)$ is the cost function.

Let's assume that firms are price takers.

In an imperfect law enforcement regime not every violator is detected and convicted. Let the probability of detection and conviction be given by θ, and, to simplify, let' s assume that all firms face the same probability.

If detected and convicted of a violation, a firm's profit will be

$$\Pi^i(q_i,x) - f(q_i - q_i^*);$$

if not,

$$\Pi^i(q_i,x).$$

So, expected profits are

$$\theta\,[\Pi^i(q_i,x) - f(q_i - q_i^*)] + (1-\theta)\,\Pi^i(q_i,x).$$

Assuming that firms are risk neutral and maximising expected profits, each q_i is determined by the first order condition (subscripts other than i denote partial derivatives)

$$\Pi_{q}^{\ i}(q_i,x) \geq \theta\ f_q(q_i - q_i^*).$$

This solution has a clear economic meaning. For a given stock size (x), the firm sets its catch rate at a level in excess of its quota, where marginal profits equals the expected marginal penalty. If there were no penalty for fishing beyond legal quota, or if there were no probability of being detected and convicted ($f = 0$ or $\theta = 0$) the firm would set its catch at the open access catch rate.

This approach reveals the importance of empirical studies trying to estimate the factors that ensure compliance with the regu-

lation (Sutinen & Gauvin, 1989). These studies give important basis for public authority decision about the actions to be implemented.

Stigler (1970) argues that public authorities have four basic means to improve compliance:

- minimising the chances that violations will go undetected,
- maximising the probability that sanctions will follow the detection of violations,
- speeding up the process from time to detection to assignment of sanction,
- making the sanctions larger.

There is a dispute among experts about the best alternatives. Some scholars have argued that the probability of being detected is more important than the size or magnitude of the sanction, while others argue that making the charging time follow as closely as possible to the detection of illegal behaviour is the most important factor in enhancing compliance. Others, also, put in evidence the level of expenditure oriented to monitoring activities (Tietenberg, 2003).

An ethical vision is seen as a reflex of the model. That is, the authority practices of enforcement have an ethical reason. Governments can impose measures to create fairness and trust among the players and raise the compliance of fishermen because it is the only way to assure that the financial and economical sacrifices of some fishermen, who do not fish aiming the recovery of the stocks, are not in vain in consequence of the irresponsible action of others.

7. CONCLUDING REMARKS

Ethics represents a set of principles and rules that are inherent to human behaviors. In this study, it is shown that law and penalties' fees are a way to bring some commitment and conformity to the mode by which resources are exploited. The proposal of this model aims to show how ethics' construct reflects the problem of human actions when exploiting common resources. The need of

governmental measures on this field is patent to get mutual obligations in the fisheries.

Common Fisheries Policy in EU shows how these principles are important in order to preserve the marine species. The European Union policies on this area reflect very important concerns about the tragedy of marine commons and intend, in a pragmatic way, to develop rules that oblige European countries fleets. Penalties were established for the violators taking in account, for instance in the establishing of the amounts, the maximization of their efficiency in imposing the acceptance of the rules by the fleets.

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