RESOURCE IMPACTS OF FISHERIES SUBSIDIES: IS EFFECTIVE MANAGEMENT LIKELY IN THE PRESENCE OF SUBSIDIES?

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Introduction

The fisheries subsidies debate has become more refined over the years. The analysis has moved from one-dimensional breakdowns to the incorporation of additional complex variables. Among these are the relationships between types of management and detrimental subsides. One of the premises at this juncture has been to explore the question: are subsidies harmful when there is effective management? The matter to be briefly explored in this work, however, shifts the burden of analysis. The query, in general, will be: is effective management *possible* with subsidies?

The present remarks and comments will try to raise discussion points on this relationship. In particular, and when appropriate, taking into account the impact and connection with developing countries.

What is effective management in fisheries?

First, there is a need to approximately define what is meant by effective management in fisheries. The successful management of fisheries can be approached from different perspectives to different publics and different disciplines. Many terms and their ensuing definitions have been developed over the years to connote a type of management regime that meets some or many of the positive attributes of acceptable fisheries management in a realm of depleting marine resources and diminishing benefits to fishing nations and communities. Characterizations such as sustainable management, responsible fisheries, and

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many others, circulate in the scientific literature as well as in the international policy making discussions. Among these plural definitions rises the concept of effective management.

The general definition of effective management used in the deliberations on fisheries and subsidies, however, tends to be an economic description deriving from bio economic models. This definition indicates that effective management takes place when the quantities of fish resources captured for each stock is set at an economically optimal target level (Hannesson, 2001). According to this characterization, the total capture limit set (and enforced) by governments is joined with inducements to industry to diminish costs of capture and (at the same time) maximize value. An economically efficient system is promoted where industry can obtain maximum value of allowed catch yet, simultaneously, stocks are maintained.

Simultaneously or in a related way, the traditional fisheries concept of Maximum Sustainable Yield (MSY)[2] is changed to a concept of Maximum Economic Yield (MEY)[3]. In overall terms, the goal is to attain maximum value added from the total allowed catch.

In short terms, the goal of effective management regimes is to maximize economic benefit *and* to maintain a cap on extraction of fisheries resources. The tools for this system are various, i.e. the arrangement does not prescribe one instrument, just a situation and an outcome. The tools can be individual quotas, licenses or concessions, or other such arrangements that operate setting a cap to catches according to biological limits *and* the right incentives to maximize economic value for the captured fish. It is understood,

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[2] Maximum Sustainable Yield (MSY): The highest theoretical yield that can be continuously taken from a stock under existing environmental conditions without significantly affecting the reproduction process of stocks.

[3] Maximum Economic Yield (MEY): The optimal difference between fishing costs and income. Relates to overall yield from a fishery that provides the maximum economic return as defined by the difference between the monetary cost of fishing and the economic value of the yield

however, that the instruments that are market tools should have a cost that reflects a value beyond fishing boats' prices but also mirror the resources' worth with up-to-date valuation methods. Here the temporal factor is incorporated by anticipating the long-term depletion and preventively applying measures to thwart resource reduction, yet at the same time incorporating economic dynamics that maximize value. Effective management is much more than one or other instrument; it is an economic model that incorporates biological dynamics.

Effective management perhaps can better be understood in comparison with the other regimes that it pretends to evolve from as a better type of fisheries administrative scheme: *open access* and *catch control.* In open access regimes there are no resource extraction restrictions and fishing units compete between themselves in order to maximize capture. With catch control regimes, a limit to the extraction quantities is set by governments, yet the tools to maximize value are not in place. Just the biological side of bioeconomic paradigm is attended to. However, effective management does attend to both sides of the biological and economic aspects of capture fisheries equation.

All this said, the status of fisheries throughout the world indicate that management regimes, when and if implemented, are, thus far, a long way from effective. Most systems in the developing world are open access and in nearly every developed country, at most, are catch control schemes. The move towards effective management is a process to an ideal state. Therefore, it can be safely stated that effective management is, at this point and for most situations, an entelechy.

Overfishing and subsidies

The elemental problem with fisheries degradation around the globe today is over-fishing. The basic commercial dynamism of over-fishing is, evidently, interconnected with the biological aspects of a natural renewable resource. Stock reaches a biological maximum expressed as maximum sustainable yield (MSY). Extracting fish resources beyond this point is over-fishing and, as in an inverted curve, decline in stock occurs in a situation

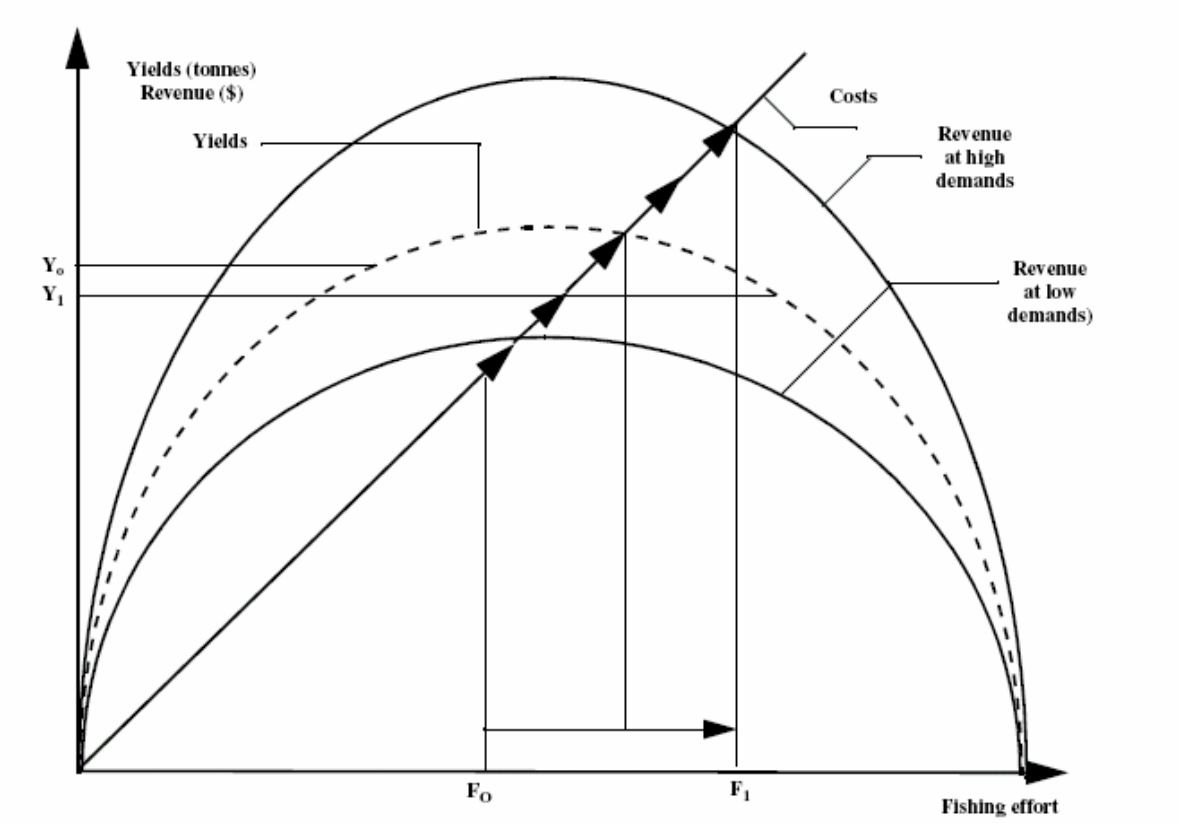
without effective restrictions on capture. This situation has been modelled as in the graph (Figure 1) that follows.

In the beginning of commercial exploitation, revenue is similar to costs, therefore there is no disposition to enter the industry, and market equilibrium is well below MSY (F0). With increasing demand, extraction technologies upgrade, price, and fishing capacity (and therefore extraction of resource) increases together with effort. Yet, this dynamic also arrives at a point where costs are equal to revenue (F1). A cyclical situation is then present with declining yield progressing downward as is declining revenue.

A second situation has been modelled with the added factor of subsidies. The cost to industry is lowered and consequently distorted (downward shift in the graph) and therefore leads more quickly to or exacerbates an over-fishing situation (as can be seen in Figure 2).

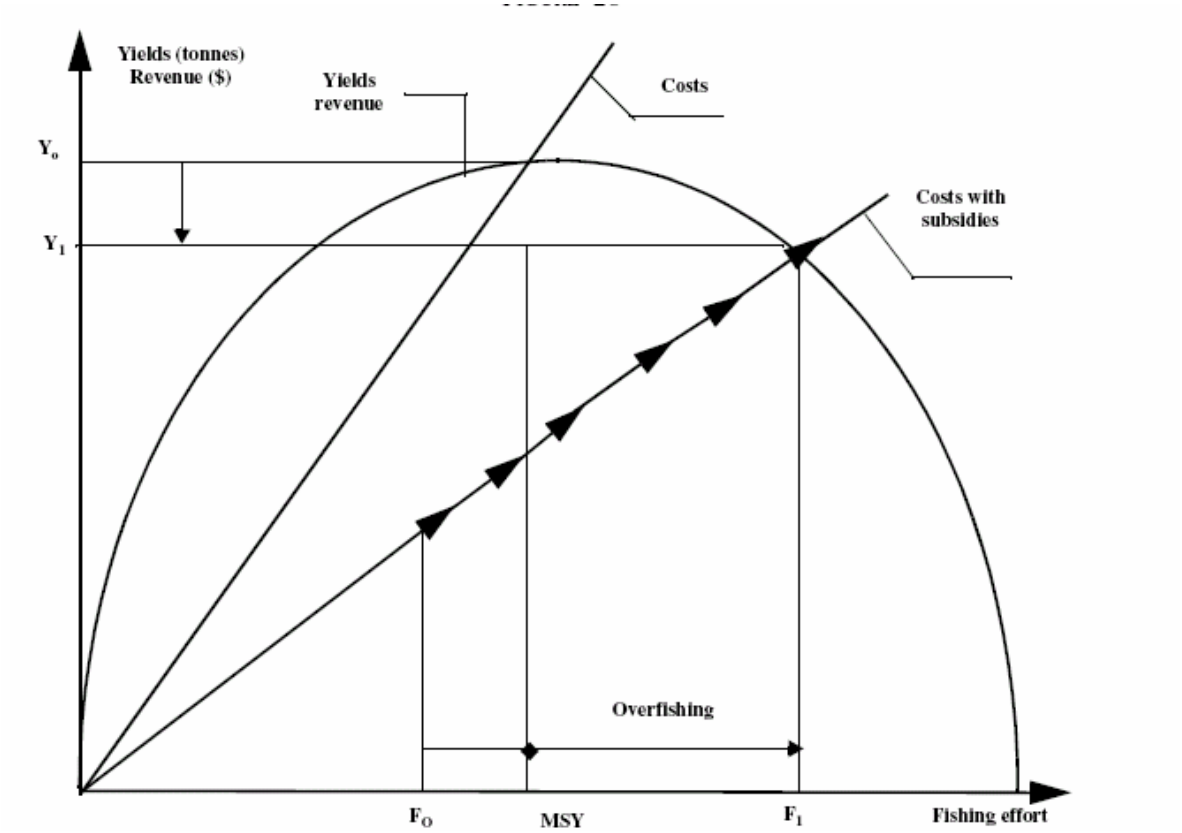
Therefore, in situations where the only economic incentive is to capture as much as possible, the biological aspect of the bio –economic equation (i.e. stocks) will be exploited beyond environmental boundaries necessary to reproduce stocks. This is exacerbated by subsidies. With subsidies, the incentive to overfish is achieved faster or maintained over time, even when stocks are in the process of depletion.

Figure 1: Overfishing dynamics without subsidies



Source: World Trade Organization, "Special Studies 4: Trade and Environment", Geneva, 1999.

Figure 2 Overfishing dynamics with subsidies



Source: World Trade Organization, "Special Studies 4: Trade and Environment", Geneva, 1999.

Effective management and fisheries subsidies

It remains to ask questions as to what is the likelihood of moving toward effective management if harmful financial transfers are present, understanding that effective

management is a desired state and not a reality in most fisheries. The question is therefore temporally predisposed. The issue is not if subsidies are harmful with effective management already in place (the general tendency in the theoretical literature is that they would not be). The question to be posed here is: can societies move toward effective management with harmful subsidies present?

Prima facie, this does not seem potentially likely and it seems even contradictory, at least in the short run, since the mere use of governmental financial transfers undermines the economic incentives that should be present in effective management. With subsidies, the incentive to overfish is achieved faster or maintained over time, even when stocks are in the process of depletion. Therefore, the very basic enticements that effective management advocates, i.e. economic incentives to reduce catch within sustainable limits, are circumvented by these financial transfers.

By drawing more enterprises and capital to the industry than would have occurred in a non-distorted and non-subsidised situation; impelling enterprises to increase and up-grade fishing technology that increases catch; and discouraging exit from industry when resource exploitation at previous levels is not sustainable any longer (all proved dynamics in subsidized situations) the undermining or cancelling of economic incentives in effective management can take place. That is, the dynamics of financial transfers can undermine the transition to effective management.

To all intents and purposes, the co-existence of subsidies with the conceivable tools to be implemented in order to obtain effective management situations can undermine or even nullify the positive effects sought with the latter. The effects sought from the instruments that need to be implemented to move towards effective regimes can be cancelled by subsidies. Therefore, in most existent situations, the move to efficient regimes can either be obstructed or undermined by harmful financial transfers.

Subsidies and effective management in developing countries

What effect do subsidies have on the process of achieving effective management in developing countries? Developing countries, for several reasons, do not at this point have successful management regimes for the administration of fisheries resources under their jurisdiction. One of the points to assert in the general management – subsidies debate is what are the impacts on developing countries of subsidized fishing activities and, moreover, what are the possibilities of achieving effective management systems in developing countries in the context of subsidies.

This is particularly important if the Doha mandate is kept in mind. That is, where this mandate indicates "Clarify and improve WTO disciplines on fisheries subsidies, taking into account the importance of this sector to *developing countries*" (WTO, 2001).

First, if –again-- the subsidies issue is seen from the economic side of the classic fisheries bio-economic equation, the impact on developing countries and their local industries are discriminatory. Given that, as has been seen, reducing costs by providing subsidies to fishing industry increases exploitation, this tends to produce an inequitable market share at the expense of unsubsidised competitors. These unsubsidised competitors are generally from developing countries given that either these countries do not subsidize fishing industries or it subsidize it at a much lower level than developed nations. A trade distortion takes place in this situation.

The increasing globalisation of fish products trade has created (and continues as a growing trend to further create) situations where both types of fishing units exist within the same fisheries: those subsidized from developed countries and those unsubsidised from developing nations. The discriminatory gain to market shares is, therefore, a very present situation.

From the biological side of the bio-economic equation, the impact on natural resources is the tendency to overfish and harm stocks to the point of collapse in many situations. As is well acknowledged and recognized, developing countries do not have efficient nor effective

management systems for marine resources under their jurisdictional waters. With the tendency to overfishing in subsidized situations, and the consequential harm to stocks, how likely is the instilling of an effective management regime for these countries?

Lastly, is the risk of a two-tier system present? That is, given the limitations present in developing countries and the administrative constraints faced, is the risk present of moving towards effective management systems in waters under developed countries jurisdiction and to continue with less desirable arrangements in waters under developing countries control? These are some of the many questions that the present debate originates.

Conclusion

The complexity of the subsidies – fisheries debate is not over by merely indicating that these transfers would not be harmful if governments control fishing fleet. Advocating effective management within the framework of bioeconomic models of fisheries can be seen as a panacea and can shift the debate (and conceivably, the responsibilities) to national rather than global policy realms.

Nevertheless, this reasoning can conceivable find fissures. First, since effective management is not present in most situations, than we are dealing with idealized situations that are not corresponding to the reality of most countries, let alone of developing countries. Second, the broader question of what instruments can be conceivably be applied (with the understanding that effective management is an amalgamation of instruments and not a tool in and of itself) in the presence of subsidized fleets is one to be faced in the deliberations. The implication, therefore, is to turn the table somewhat and not only deal with the argument that in an idealized situation subsidies are not harmful. The debate should also be indicative as to how societies could or could not move to efficient management in the presence of distorting transfers.

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