Departamento de Economía Aplicada

THE REFORM OF THE COMMON FISHERIES POLICY
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MANAGEMENT OF RESOURCES IN EUROPEAN FISHERIES

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Introduction

Good management of fish resources and economically efficient management of fisheries amount to the same thing. It is impossible to carry on optimal economic activity on a depleted stock. However, since the inception of the Common Fisheries Policy (CFP) in 1983 there has been little or no recognition of this. Indeed, management of resources has been treated as a purely biological problem with the economics regarded instead as a threat to the resources. Not surprisingly the conservation objectives implied within the CFP have not been met. With the absence of applied economics, they could not be.

The situation has reached such a state that the Commission has been forced to admit the failure in its Green Paper on Reform of the CFP (European Commission 2001):

> "Almost twenty years from its inception, the Common Fisheries Policy (CFP) is confronted with major challenges. The policy has not delivered sustainable exploitation of fisheries resources and will need to be changed if it is to do so. Its shortcomings can be expressed in conservation, economic and political terms.
>
> "As far as conservation is concerned, many stocks are at present outside safe biological limits. They are too heavily exploited or have low quantities of mature fish or both. The situation is particularly serious for demersal fish stocks such as cod, hake and whiting. If current trends continue, many stocks will collapse. At the same time the available fishing capacity of the Community fleets far exceeds that required to harvest fish in a sustainable manner.
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> "The current situation of resource depletion results, to a good extent, from setting annual catch limits in excess of those proposed by the Commission on the basis of scientific advice, and from fleet management plans short of those required. Poor enforcement of decisions actually taken has also contributed to over-fishing."

Yet the proposals contained in the Green Paper and announced since contain little recognition of the role of economics and no suggestions for its use to conserve the stocks. The failure is attributed among other things to insufficient scientific research. This is extraordinary given that at the same time as the proposals were being published the Commission was introducing emergency measures to try to prevent the North Sea cod stock from collapse. North Sea cod is probably the most studied fish stock in Europe.

In the response of the European Association of Fisheries Economists (EAFE) to the Green Paper (EAFE 2001) it was noted:

> "Fishing is an economic activity which exploits a self-renewing common-property resource, fish stocks. The absence of effective stewardship permits a race to fish which are free to the user but which

nevertheless have an economic value. This separation between the private cost and the economic cost causes a market failure. It creates an externality - a spill-over effect - which manifests itself as an incentive to overcapacity and over-exploitation.

"The fundamental problem has been known for decades (Warming 1911, 1931, Gordon 1954). In a debate about a proposal to extend common-property rights by cancelling the fishing right the famous Danish economist Jens Warming, Professor of Economics at the University of Copenhagen, was the first to show, as early as 1931, and which has been demonstrated many times since then by other economists, the social loss that would be incurred.

"There is no recognition of this in the Green Paper. Instead, with minor adjustments the proposal is for the CFP to continue using the same approach as at present except that regional management and greater industry participation in management decisions are vaunted. There is no indication as to why instruments which the Commission acknowledges have been a failure will be more effective in the future."

The Institutional Framework of the Common Fisheries Policy

The CFP has a number of institutions available:

- *Total Allowable Catches*

These are set by the Council of Ministers and apply only in northern and western waters. The Mediterranean Sea is excluded. The TACs are divided into national quotas under the principle of relative stability and are managed and enforced by Member States.

In economic theory TACs are ideal in that they are explicit constraints and cannot lawfully be evaded. Compare this with input controls examined below (see Figure 3 and the explanatory text).

- *Technical Conservation Measures*

There is a wide selection of these, some good and some bad. For example, the closure of nursery grounds, such as the North Sea Plaice Box along the Dutch, German and Danish coasts at worst can do no harm to the stock. At best the benefits should outweigh the increased costs of steaming time or laying up.

Minimum Landing Sizes are less obviously beneficial. Intended to allow more fish to join the spawning stock (which could equally be achieved by a lower TAC), they ignore the demands of the market. Some species are more valuable when small.

Unfortunately, the technical conservation measures have too often been intended to make fishing less efficient in the vain belief that this would promote stock conservation.

- *Capacity Controls (The Multi-Annual Guidance Programmes)*

These have run into the problems of definition and meaning. It is normal for most industries to have a degree of overcapacity which it is economically worthwhile to hold in reserve to meet rapid increases in demand. The market prevents its use by limiting output to the point where the cost of producing the marginal unit begins to outpace the price received for it. In fisheries, the excess capacity is often capable of being used profitably. EU measures to control capacity have defined it both as the kilowatts engine power of the fleet and as the Gross Tonnage.

Inherent in the difficulty of obtaining a consistent definition of capacity, trying to control it by direct regulation is fraught with problems because legitimate increases in power may still exist outside the definition chosen. These frustrate the objective. As technical efficiency is increased the effectiveness of the control is reduced accordingly.

- *Effort Control*

Effort control is available under Regulation 3670/92 but has been used very little and not as a management instrument. Some voluntary control has been applied by fleets themselves. For example, in Spain the *Cofradias* often regulate activity by limiting the length of the fishing day. Generally, however, it is not possible to define a measure of fishing effort because of the incomparability of different fishing methods. Controls can be introduced in relatively homogeneous fleets but remain subject to legitimate evasion.

The Effect of Open Access on Input Use and Profitability

The theory of the economics of fisheries was first set out by Warming (1911, 1936) but remained unknown. The modern revival owes its foundations to Gordon (1953, 1954) and has since been developed by Turvey (1957), Copes (1970), and Anderson (1982), among others.

In a common-property fishery with open-access with a universally diminishing marginal product, the average and marginal product functions assuming a constant price are represented in Figure 1.

As the input increases the quantity of fish harvested approaches the total stock of fish available. Since the fishermen could fish elsewhere the open-access opportunity cost of fishing will equal the marginal and average product of fishing in the best alternative fishery.

Input to the fishery continues to increase so long as the average product is greater than the average cost, because it is still profitable, until the entry of the marginal unit of input, when the marginal profit declines to zero.

Hence, economic equilibrium in a common property open-access fishery is where the average product equals the average cost of input. At that point the resource rent is dissipated though there will continue to be factor rents (Copes 1970).

A profit-maximising single owner of the fishery would use only sufficient input at open-access opportunity cost to bring the fishery to the point where the average product equals the marginal cost of inputs.

With the assumption of exogenously-determined price, the economic profit that could be obtained from the fishery by society as a whole is represented in Figure 1 by the shaded rectangle. This area represents the amount lost to society from pursuing a near open-access policy.

Figure 1: Economic Equilibrium in an Open-Access Fishery

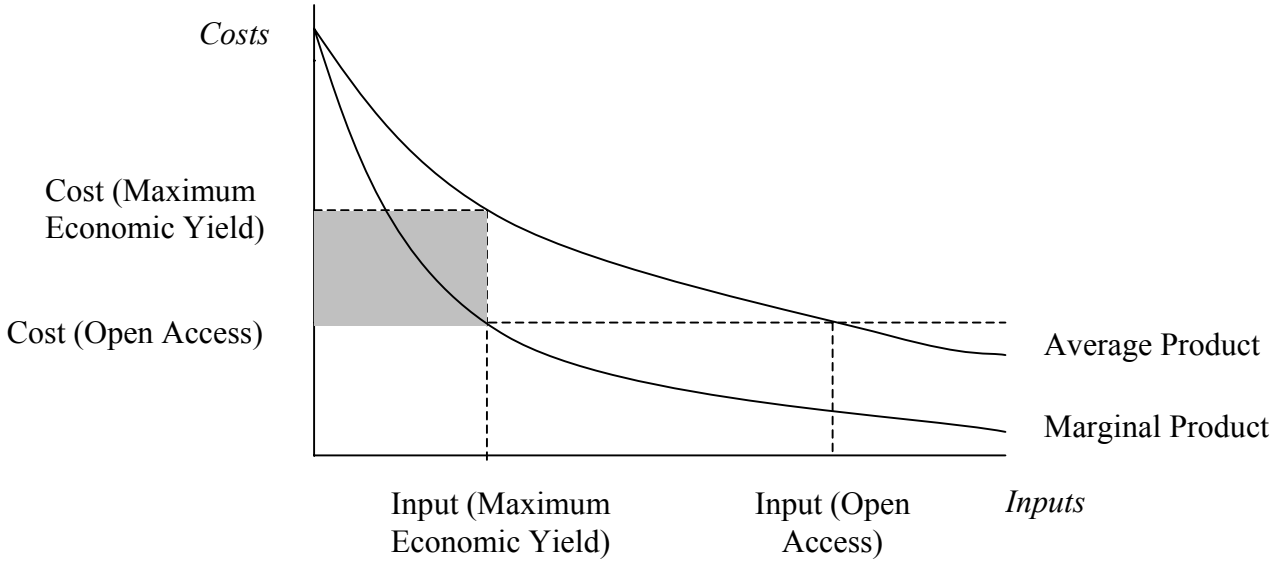


Figure 2 incorporates the effect of open access on the fish resource, though still in an economic context (Lindebo *et al* 2002).

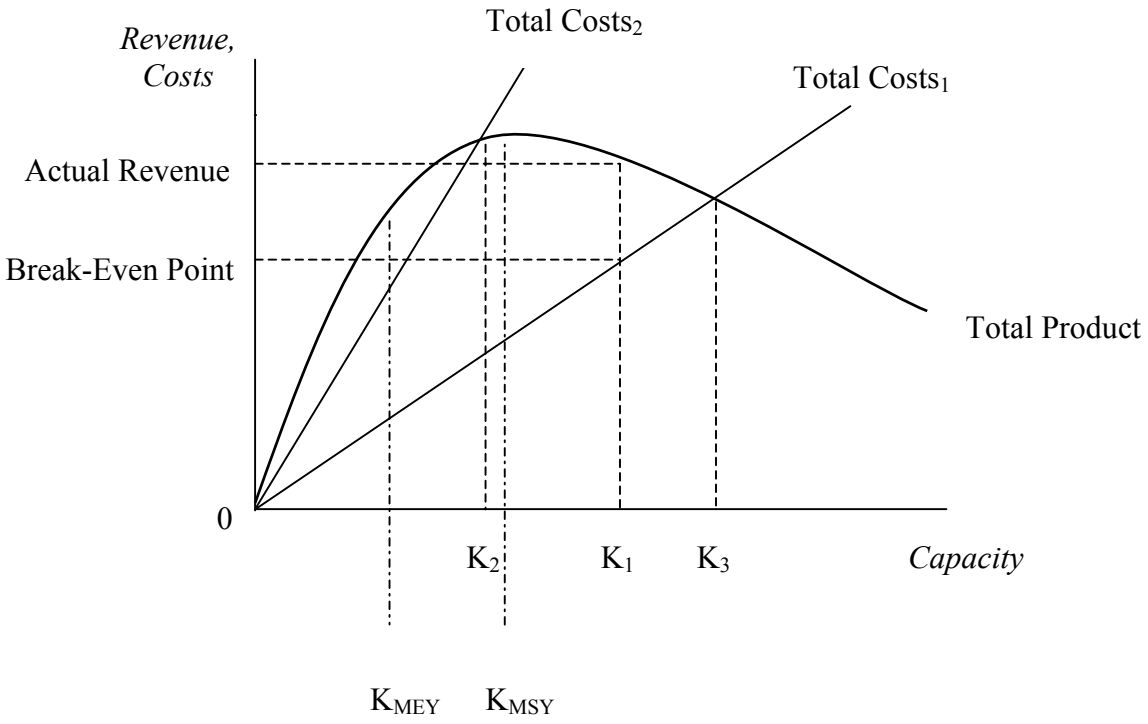
The Total Product curve reflects an assumption of constant prices and a stock which, as it is fished beyond the point of Maximum Sustainable Yield (MSY), is progressively less able to replenish itself. The two cost curves assume a constant unit cost of input directly proportional to the fishing capacity used.

At position K_1, the fleet is making a profit; actual revenue is greater than the break-even revenue. The incentive is thus to continue to increase the capacity used. This incentive exists if K_1 were at any point between the Origin and K_3. Thus capacity increases until the point K_3 is reached, beyond which there are no longer any economic profits to be made. In the case of the particular stock, capacity has now expanded to a point beyond that needed to harvest the maximum economic yield. The stock cannot fully replenish itself.

This is brought about by the relative positions of the revenue and cost curves. The lower Total $Cost_1$, the greater the threat that the stock will be fished below a safe biological minimum level.

To ensure the survival of the stock and to exploit some of the resource rent for the benefit of society it is necessary to reduce capacity to some position such as K_2, below K_{MSY}. Thus an essential part of resource management is management of the capital input. However, this need not be done directly. Indeed, in no major fishery and few if any minor ones has direct control of capacity alone ever succeeded in conserving the stock. The reason for this is apparent in Figure 2. A level of capacity, K_2 is achieved by raising the cost curve to Total $Cost_2$ changing the economic incentive so that there is an inducement to reduce capacity to K_2. Ideally K_2 and K_{MEY} would be congruent as this where economic rent is maximised under the assumption of constant prices.

Figure 2: Economic Sustainability and Long-Run Overcapacity



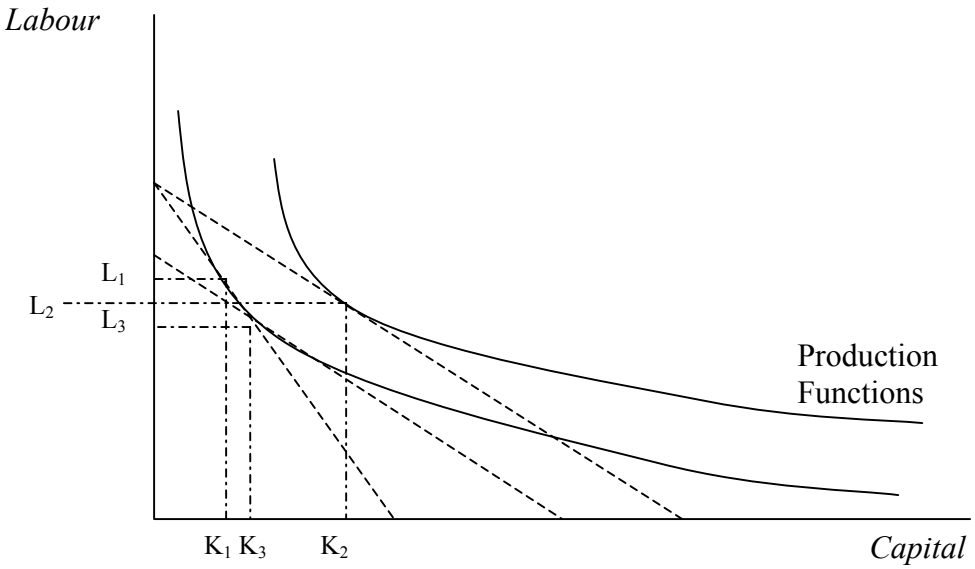
Thus the symptoms of inadequate management are over-fishing and overcapacity. The consequences are wastage of capital and fish stock resources and of the resource rent.

The Effect of the Financial Instrument for Fisheries Guidance on the CFP

It would be incorrect to imply that the conservation and resource management policy of the CFP acted in isolation from its other aspects. Consider, for example, the Financial Instrument for Fisheries Guidance within the CFP structural policy and the EU's regional policy. The FIFG offers subsidies and incentives for improving vessels and infrastructure. The regional policy seeks to preserve employment in the more remote areas of the EU; often these are the areas highly dependent on fishing.

Figure 3 shows the impact of subsidising capital on the use of capital and labour in fishing.

Figure 3: The Effect of the Financial Instrument for Fisheries Guidance on the CFP



From starting inputs of L_1 units of Labour and K_1 units of Capital which produce a given output, the effect of subsidising capital is to lower its cost to the fisherman. With a given budget, the amount of capital used will increase and substitution of labour for capital will occur. The new position is represented by K_2 where the amount of labour used has fallen and the amount of capital used has increased. However, this is a transitory position as it would produce a higher level of output on the upper production function.

Since output is usually constrained by quotas the amount of labour and capital must be reduced until the original level of output is attained, but this is done only with new levels of input – L_3 units of labour (less than originally) and K_3 units of capital (more than originally). The movements from K_1L_1 to K_2L_2 represent the substitution effects and from K_2L_2 to K_3L_3 are the income effects.

These substitution and income effects on the input side are extremely important and have a wider significance. They indicate the reason why output controls are preferable to input controls. An explicit limit on landings cannot be lawfully evaded. Limits on inputs invite substitution by unregulated inputs.

REASONS FOR THE FAILURE OF THE CONSERVATION POLICY WITHIN THE CFP

At the outset it is worth mentioning that while the CFP's conservation policy may have been a failure, it may well have reduced the rate of decline of some stocks. Nevertheless, by the Commission's own admission the policy has not succeeded in conserving stocks and the flaws in the system are now showing their effect.

In essence there is only one reason for the failure. The management measures applied within the CFP have not addressed the market failure.

What success there might have been only increases the value of the stocks and thereby increases the incentive to over-fish. Without correcting the market failure no long-term success is possible.

We have shown that capacity and "effort" controls cannot in themselves succeed though they may be a useful addition to TACs. We have indicated that technical measures are potentially useful but will be of no use if they are intended as a means of making fishing less efficient. All these measures only have a value if the market failure is addressed.

Remarkably, within the existing CFP it is perfectly possible to establish an economically efficient management system which would promote stock conservation.

The Netherlands has an Individual Transferable Quota (ITQ) system in place for its beam trawl fleet and the UK has a *de facto* ITQ system for its Producer Organisation members among the over 10 metre fleet. However, neither country is able to enjoy conservation benefits because they share stocks with other Member States which do not operate economically efficient systems. They also have faced the problem of removing capacity which developed before the introduction of their current systems. This capacity is often written off in the books but still has earning potential. These distortions appear to take many years to correct. (ITQs are not the only way of addressing the market failure.)

This highlights a major problem within the CFP. The Commission has the responsibility for stock conservation and management by the TACs, but the Member States have the power to enforce the measures through their quotas. This division of power and responsibility is a serious weakness.

DESIRABLE FEATURES OF THE NEW COMMON FISHERIES POLICY

From what has been written above it is clear that the management of resources within the new CFP needs to continue to be based on output controls (TACs) supported by controls on inputs. There remains an important place for capacity controls and technical measures.

It is desirable, if the consumer is truly to be recognized by the new CFP, that the measures should be market orientated. This applies particularly to making minimum

landing sizes and market size requirements compatible. If small fish are required by the consumer then both the minimum landing size should be set accordingly and the quota and other technical measures adjusted to ensure that the spawning stock is safe.

Conflicting incentives, such as those introduced by subsidising capital, and the introduction of other economically inefficient measures should be avoided to reduce distortions.

Responsibility and power should lie together in the same organisation. Thus it should not be left to Member States to decide whether to address the market failure. If one fails to do so the benefits to all are lost.

Ideally, participation by the industry and its acceptance of some of the burden of administration and, ultimately, research costs could be considered. In the context of the next CFP this is almost impossible but would be a fair rejoinder to the establishment of a stable and profitable industry.

Resource management within the next CFP also must be consistent with the wider environmental objectives currently being discussed within the Commission.

None of these measures, however, will help resource management unless the market failure is addressed. This is the single most important objective that the new CFP must have. It does not appear that the proposals in the Green Paper or since recognize this, but as economically (and therefore biologically) sound management of fisheries and resources is possible within the existing CFP it is to be presumed that the opportunity will continue within the new framework.

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