

Overcapacity, Overfishing and Subsidies: How do they Affect Small-Scale Fisheries?

By John Kurien



Introduction

In recent years, the twin issues of overcapacity and overfishing have engaged the attention of fishery experts around the world. Many conferences and workshop sessions organised by the FAO, the WTO and leading global environmental organisations such as WWF have gone to great lengths to highlight that the major problem facing world fisheries today pertain to these inseparable issues. While much of the criticism has been targeted at industrial fishing operations, many attempts have been made to bring small-scale fisheries into the debate. It is still necessary to ask whether all this brainstorming has led to greater clarity on the matter. Some reports of the conferences and meetings suggest that there has often been much storm and little brain!

What is more disturbing has been the recent 'discovery' that the main driving force behind overcapacity and overfishing are the large quantities of subsidies which have been given to fishing units around the world. It has been argued that clear proof of this comes from the fact that despite global fishing costs being higher than global fishing revenues, fishing fleets continue to fish. This 'irrational' action is attributed to the fact that subsidies given by governments are underwriting the operating losses. A famous FAO study published in 1992, which analysed the

costs and earnings of the global fishing fleet, is offered as the empirical basis for this conclusion.

In this short article, I would like to make two points. First, I want to highlight that this attempt to relate overcapacity and overfishing primarily to subsidies arises from a faulty understanding of the factors that promote fleet capacity building, which in turn lead to overfishing. Second, I will make a more detailed analysis of data from the 1992 study to show that if indeed subsidies are a major factor in underwriting losses in global fishery, then this is restricted to the industrial, large-scale fisheries operations. Small-scale fisheries are not beneficiaries of this largesse.

Overcapacity, Overfishing and Subsidies

The main factors behind overcapacity and overfishing can be summarized as follows:

1. The principal explanation for the expansion of fishing activity, at a given level of technology, and subsequently for the physical expansion of harvesting capacity, is the expansion of the (global) market for fish.

2. The second explanatory factor is changes in technology. This can be seen as an autonomous development that may create sector-specific technological innovations, and result in their widespread diffusion. However, diffusion and technological change are greatly spurred in the presence of factor (1) above. The nature of the technology will greatly condition the fishing activity and the harvesting capacity.
3. The third explanatory factor is institutional arrangements for access rights to the resource. Closed and limited access has previously been a barrier to entry into the sector. Changes in the rules and norms governing access, particularly a movement towards more open access, have created incentives for more fishing activity and fishing capacity. This is exacerbated when factor (1) or (2), or both, are present.
4. The fourth factor is the expansion of fish processing capacity in response to one or more of the above factors. The requirement for raw material for processing creates the demand for expansion of the backward linkages into the fishing activity and harvesting capacity.
5. The fifth factor is the support or subsidies in the system. The encouragement provided directly or indirectly by government or private sources (for example, by multinational fishing companies) plays a role in enhancing fishing activity and harvesting capacity. The extent to which this support is sustained will depend on the individual or joint presence of the four factors above.

Each of these factors, alone or in combination, will have a bearing on the level of fishing activity and harvesting capacity that is created and sustained in a fishery. It is also clear that *subsidies alone* are not a necessary condition for overcapacity and overfishing. However, when subsidies – particularly those intended to enhance the vessel or gear capacity – are added to the other factors they can hasten the process, and when taken to an extreme, this can lead rapidly to overcapacity and overcapitalisation in the fishery and create unhappy economic, social and ecological consequences.

The current global attention to subsidies in terms of the role they play in enhancing fishing activity and expanding harvesting capacity is therefore exaggerated. This is particularly so from the perspective of developing countries, and more particularly from the standpoint of the least developed among them. Placing a check on excessive fishing activity and capacity, if they do exist, will first require taking a much closer look at the factors mentioned in (1) to (3), namely *markets, technology and institutions*. Attempting to discipline subsidies will attain meaning and



effectiveness only in that context. Now let us turn to small-scale fisheries.

Small-Scale Fisheries in this Scenario

In the development decades – 1950s to 1970s – discussions in fisheries centred around the need to increase fishing effort and fishing capacity. The popular paradigm was that the natural progression of all the world's fishing was necessarily towards the industrial mode. What remained unsaid was the strong belief that the small-scale fishing units in the world, particularly in the developing countries, would gradually disappear – rapidly in some countries and slowly in others.

Consequently, small-scale fishing was neglected in fishery policy in most developing countries. They were certainly not the recipients of official patronage in the form of loans and subsidies. But they endured despite the neglect and the discrimination: over half a century down the line, the small-scale fisheries sector remains vibrant, and accounts for anything between one-half and three-quarters of fish production in most developing maritime states. In the 21st century, the sector is being 'rediscovered' as the right structure for marine fisheries in tropical developing countries.

How do we define the sector? Smallness is a relative measure. What is small-scale in one country may be exceptionally large in another. In the WTO debate, there was an attempt to define 'artisanal' fishing units, and exempt them from the disciplines of subsidies. However, this approach is not without complications of its own. For example, many artisanal fishing units can be larger than some modern small-scale fishing units.

This issue of definition could be approached by proposing that the fishing units in any country can be split into three groups. Two of them can be unambiguously defined. The amorphous third group can be clubbed together as the “other fishing units” of that country. The small-scale sector can be defined as being composed of artisanal and other fishing units.

At the *top end*, we define *large-scale fishing units* as those fishing units that should be listed in Lloyds Register.

At the *bottom end*, we define *artisanal fishing units* as those fishing units that use non-automatic gear deployment or hauling devices.

In the *middle*, we define *other fishing units* as the remaining fishing units in the respective country.

The advantage of this approach is that the criteria are simple and without ambiguity, and can be uniformly applied. The administrative costs of assessment are greatly minimised and subject to very minimal adverse selection. However, the approach does not negate the dissimilarities and diversity within a fishery or between countries.

All over the world, artisanal fishing units, as defined above, can be exempt from any subsidy disciplines. In developed countries, the subsidies given to both large-scale fishing units and other fishing units should be subject to current subsidies disciplines of the WTO. In the developing countries, taken as a whole, only subsidies given to the ‘large-scale fishing units’ should be subject to current subsidies disciplines of the WTO, if at all.

Is Overcapacity and Overfishing in Small-Scale Fisheries Due to Subsidies?

Now let us turn to the much quoted in the landmark 1992 FAO study to show that by no stretch of imagination can

we say that small-scale fisheries are guilty of receiving large subsidies. By that measure we can also argue that the contribution of subsidies to overcapacity and overfishing is small.

The FAO study was a first attempt to assess the economic health of the global fishing fleet. Given the data limitations, the analysis made was of a very aggregate nature. It hid the huge variations that existed between countries and fleet types in this regard. Capital investment and running costs differed so widely. Assessing the economics of the global fishing fleet by adding factory trawlers with sailing vessels is like assessing food intake of fish by adding up the diets of whales and anchovies.

The main purpose of that study was to make an approximation of the costs and revenues of the global fishing fleet and show that the operating costs were in excess of the revenues. Personal communications with Francis Christy, the main author of the FAO report, indicate that it was mere coincidence that available data and the interest in the FAO to work out these global aggregates of costs and earning came together in the late 1980s. The idea of the authors was only to give a first approximation. They provided details of the mode of calculation and also provided more disaggregated data in Appendices so that others could make their own calculations and more nuanced conclusions. The study made a global estimate of total costs over gross earnings to be in the order of USD 20 billion, and suggested that this gap must have been largely filled by subsidies. The study also stated that total annual operating costs (excluding labour) were equal to total annual gross revenues of USD 70 billion.

We have made a more discerning and disaggregated analysis (**Table 1**) of the famous FAO 1992 study, using the Appendix tables provided in the original study, to show how deceptive and misleading global aggregates can be when dealing with a realm of such wide diversity.

Table 1 Break-up of the replacement costs and operating costs of the global fishing fleet (1989) based on the FAO (1992) calculations

	Global fleet	Industrial fleet	Undecked boats	Decked
Number	3,235,710(100)	35,710(1.1)	2,100,000(65)	1,100,000(33.9)
Replacement cost(USD billion)	319.0	229.0(71.8)	2.1(0.65)	87.9(27.55)
Annual maintenance*(USD billion)	30.2	20.18	0.12	9.90
Insurance*(USD billion)	7.19	4.43	0.12	2.64
Supplies and gear*(USD billion)	18.50	7.98	0.84	9.68
Fuel*(USD billion)	14.06	6.12	2.17	5.77
Labour(USD billion)	22.71	11.31	3.15	8.25
TOTAL OPERATING COSTS(USD billion)	69.95(100 %)	38.71(55.3 %)	6.4(9.2 %)	24.84(35.5 %)

(Note: Total Operating Costs are the summation of the costs marked with *)

Source: Calculated from Appendix Table 2, 3, 4 and 5 of the FAO-SOFA 1992 Report

Of the world's 3.24 million fishing vessels in 1992, slightly over one percent were industrial vessels. These accounted for about 72 percent of the global capital replacement costs and 55 percent of the global annual operating costs. On the other hand, the 2.1 million undecked¹ fishing, practically all of which are found in developing countries and comprising 65 percent of the global fishing fleet, account for a mere 0.65 percent of the capital replacement value and only 9 percent of the annual global operating costs. As we are not able to provide a similar disaggregated analysis of the revenues (due to the lack of data) it will be hard to make any affirmative statements about the gap between costs and revenues in the industrial fishing fleet and the undecked fishing fleet.

However, a simple calculation shows that for the undecked fishing vessels, the annual operating costs per vessel were about USD 3,000 per year. The FAO study further assumes that the undecked boats fished for 180 days in a year. This would imply a daily gross operating cost of USD 17 only. The gross revenues per vessel would likely be at least as much as there is unlikely to be a deficit in their aggregate operations. Even if we assume that the world has an 'overcapacity' of undecked fishing boats, the argument that subsidies are the cause is hard to accept.

Similarly for the decked vessels, the annual operating costs per vessel are about USD 22,600 and using the same assumption of 180 days would imply a daily gross operating cost of USD 140 only. Here too the possibility of a deficit in aggregate operations, though possible, is unlikely to be very significant. The presence of overcapacity in the decked vessels is thus likely to be small.

From our above analysis, it is clear that we have to look beyond the single factor of subsidies to understand the dynamics of fishing capacity. Moreover, it should be clear that if subsidies are a causative factor in overcapacity, it will be almost exclusively in the industrial fishing fleet that accounts for just one percent of the fishing units in the world.

Conclusion

Overcapacity and overfishing are real phenomena in world fisheries today. We must take cognisance of this reality, and take all possible measures to bring the phenomena under control. This paper aims to highlight that the paths by which global fisheries reached this state of affairs are

¹ Fishing boats other than industrial class vessels can be broadly classified in to two groups: decked and undecked. All the undecked vessels may safely be classified as artisanal fishing units, as gear retrieval devices are technically difficult to use on them.



complex. The current cacophony highlighting subsidies as the main villain actively prevents us from making a causative analysis of the problem. Moreover, it is unfair to treat all the fishing fleet of the world as being guilty of overcapacity and overfishing.

A more nuanced understanding using the data provided by the famous FAO 1992 study reveals that a very small share of the world's fishing fleets account for the larger deficit between costs and earnings of the global fleet. The small-scale fishing fleet, made up of undecked – artisanal – and decked fishing units, although accounting for 98 percent of the world's fishing fleet, can hardly be accused of large-scale use of subsidies to build up overcapacity leading to overfishing. This is not to suggest that overcapacity and overfishing are not in themselves problems for small-scale fishing. The point is that the full explanation may have to be sought in more complex factors relating to markets, technology and institutions, and not just largesse arising from subsidies.

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