

The scientists and the fishermen working
together to manage the North Sea
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OPTIMISING PROFITABILITY OF THE FISHING SECTOR

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Abstract

The paper discusses the current views on objectives of the fishing firms and those of the fisheries managers. It shows that while for firms labor is simply a cost component. For some policy makers creation of employment is an objective. Similarly investments may be (fiscally) attractive for firms, while they represent a cost to the society. The paper pleads for greater involvement of fishing sector in stock management as that could make commercial as well as management sense. In the final part, the paper elaborates a hypothetical scenario, in which the exploitation of the North Sea stocks would be leased to one large company. The paper shows that the objectives of such company could be more in line in maintaining fish stocks at an optimum long-term level. The tragedy of the commons problem would be resolved with one sole owner. In this way the paper illustrates the economic consequences of different institutional arrangements.

1. Introduction

Over the past decades the financial results of many segments of the European catching sector have not been very satisfactory. Some fishing fleets have become rather dependent on government support, mainly for investments, but in some cases also for operational expenses. In various EU Member States fishing is not considered as a truly economic activity, but rather as means of maintaining the economic basis of coastal communities.

In general there are trends towards increasing liberalisation of the economy in all sectors. Support provided from the EU structural funds to agriculture and fisheries has come under scrutiny within the Agenda 2000 proposals. It may be expected that the fishing companies will be faced more directly with the economic facts of life. Making sufficient profit will be the only way to survive in the short run and modernise and compete in the long run. In that new situation it may become necessary to introduce some fundamental changes into the thinking about management of fishing firms, exploitation of fish stocks and about the tasks born by the government and the industry as far as fisheries management is concerned.

The objective of this paper is to explore the possibilities of improving the profitability in the fishing industry. For this purpose the paper is composed of two parts. First, it reviews the topics, which would be traditionally touched upon. How does the fishing sector act in relation to catches, prices, revenues, costs, investments, productivity, etc? This review is largely based on the current practices. Secondly, the paper sketches a scenario where one large corporation would buy exploitation rights of the North Sea fisheries. The central question of this scenario is: 'How will a corporate owner go about exploitation of fish stocks?'. On the basis a comparison of the two sections, some conclusions are drawn about the necessary adaptations of the current practices.

2. Optimising profitability

This section looks at optimising profitability in the perspective of current practices. First, it looks at the question of who are the perceived beneficiaries. This partly depends on timing (generations) and partly on what is considered as profit. The subsequent sections deal with issues like feasibility of increasing revenues, reduction of costs and improvement of productivity through investments in boats and fish stocks. Finally, the section looks at the intangibles, which the fishing sector enjoys today: absence of loyalties and taxpayers picking up the bill of management costs.

2.1 Whose profits and when?

Optimising profitability is another expression instead of asking: 'How to increase profits?' This is relatively easy in case of one single company. The company has namely only one objective: 'to make money'. This objective has to be achieved within constraints set by the society: paying taxes, adherence to environmental protection rules, etc. But beyond those rules, its attention is not distracted from 'making money', by any other considerations like high employment, maintenance of the traditional village next door or protection of endangered species.

When it comes to profitability of the sector, it is inescapable to ask questions like: 'To whom are these profits going?' or 'What should be the timing of the profits?'. In theoretical fisheries economics,

this question is easily answered: The society wishes to optimise or to maximise the rent from a resource. How to do this in practice is less clear, but as a concept this is quite sound.

In the real world fishermen compete with each other at sea as well as on shore. One cannot catch what the other one already had caught. One group using one fishing technique may improve its results at the expense of another group using another technique. In today's discussions about fisheries management and economics of the sector, this fact of competition does not receive the attention, which it deserves. In a situation with a given volume of a finite resource, improving profitability of all vessels at the same time, may not be impossible, but its feasibility is highly unlikely. It is the individual entrepreneurial and fishing skills along with a multitude of economic and other forces, which will determine in the end who will survive and maintain or increase his profits and who will have to go out of business. Economic survival is the law of the jungle. In fisheries it is not different from any other economic activity.

Who will reap the benefits of fishing today depends on the competitive power of the fishing companies. However, what about the competition between subsequent generations? It is the task of the government and its fisheries policy to make sure that profits will be feasible also in the future. How large these profits will be remains largely obscured, as ecological and economic processes cannot be forecasted into distant future.

Finally, there is an ambiguity regarding the definition of 'profit'. A single company may focus on fiscal profit or on cash flow. The latter being the current practice in the short run. In that case labour represents costs. When it comes to society as whole, it is the gross value added which is the main point of reference, i.e. remuneration of labour and capital before tax. These distinct views of individual vessel owners and 'society' lead to frictions when it comes to implementation of a management policy.

2.2 Increasing revenues?

In the classical evaluation of the possibilities to increase profits, the first option to consider would be to increase revenues. It is elementary to state that revenues are a result of landed volumes and price. What is happening to revenues and prices in the UK and the Netherlands is presented in the following figures.

Despite all the differences in details, the figures show that the real value of UK landings has decreased steadily over the past almost 30 years. The prices of main commercial stocks have remained rather constant in the UK. In the Netherlands there has been a very slow rise in the real price at a rate of approximately 1-1.5% per annum for plaice and cod, but the price of sole has remained also quite constant.

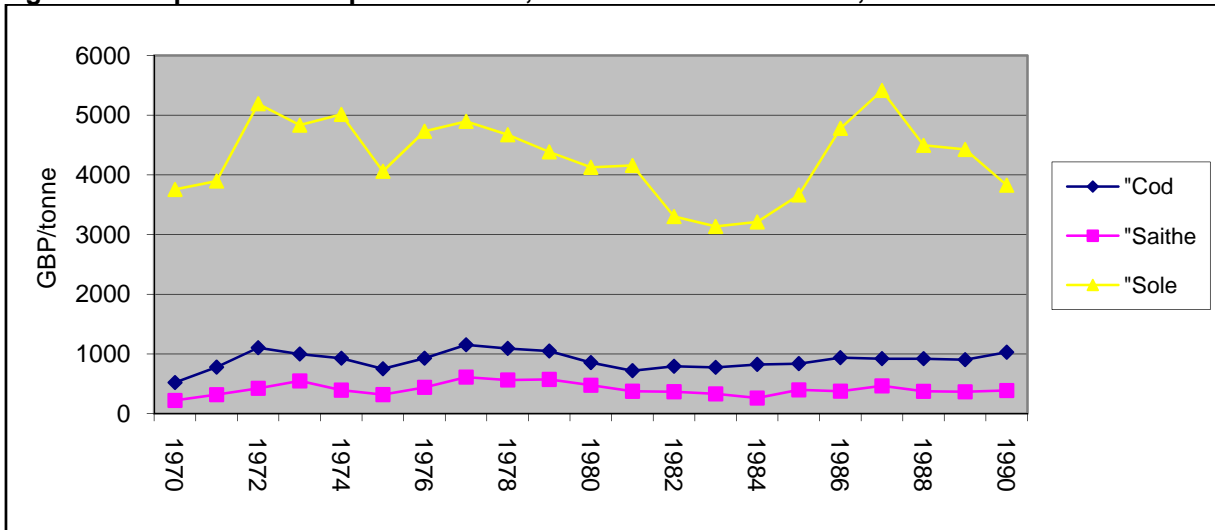
This may be attributed to many factors, of which four may be mentioned. First, it is characteristic for all food products that their real prices do not rise over time. The second factor may be that the composition of the landings has shifted, small market sizes representing a relatively higher share of the total catch. Although this is something, which in theory could be managed by the fishing sector (wait till they grow), it is difficult to say whether this is a really feasible proposition. Thirdly, fish has become a globally traded commodity. The overall price level is affected by the price of frozen blocks of white fish produced anywhere in the world. Finally, aquaculture developments, like salmon farming where the price has dropped by 50% over the past 7-10 years, have also had a depressing effect on fish prices in general.

The question of increasing landed volumes can be better discussed by biologists. Economic theory shows that unless the fundamental problem of common property is resolved, competition among fishing vessels will always lead to fall in profits. Gordon, Hardin and many others have described this phenomenon. The only solution to the problem of commons is effective co-operation among the producers. However, today the producers prefer to compete and blame the government.

When the volumes cannot be expanded and the prices will not rise due to scarcity, it is often suggested that improving quality should lead to higher prices. Than it is necessary to address the question 'What is quality?'

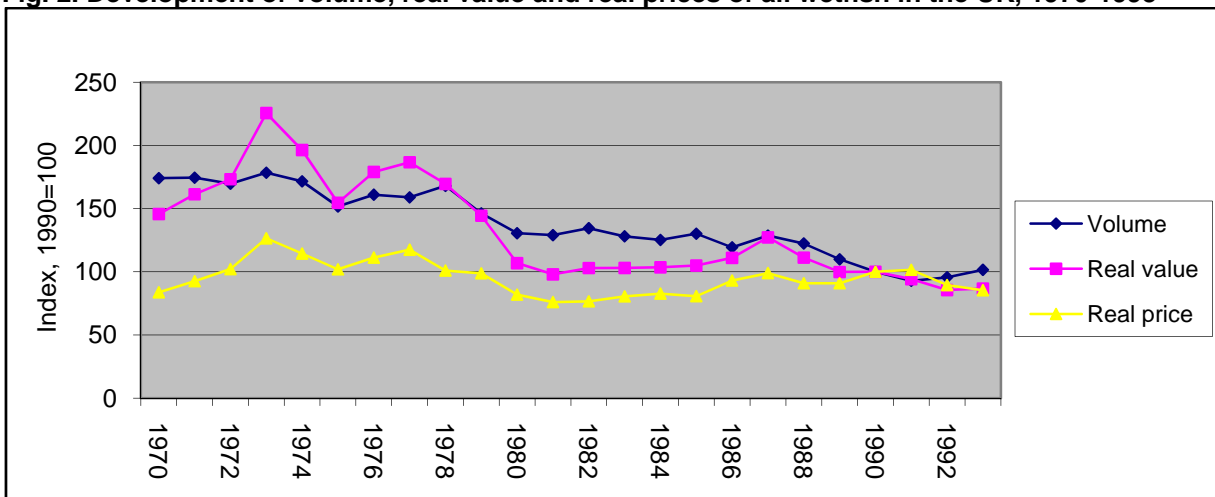
Today improving quality of fish cannot be interpreted simply in terms of freshness. Rather it means meeting consumers' demands in all respects. The production / catching process has to become market orientated and less resource (supply) based. It means that the catching sector must give actively attention to market developments. This is a different attitude from waiting in the auction what price will be offered. This seems difficult to put in practice effectively by individual fishermen. Serious co-operation is a major requirement for success.

Fig. 1. Development of real prices for cod, saithe and sole in the UK, 1970-1990



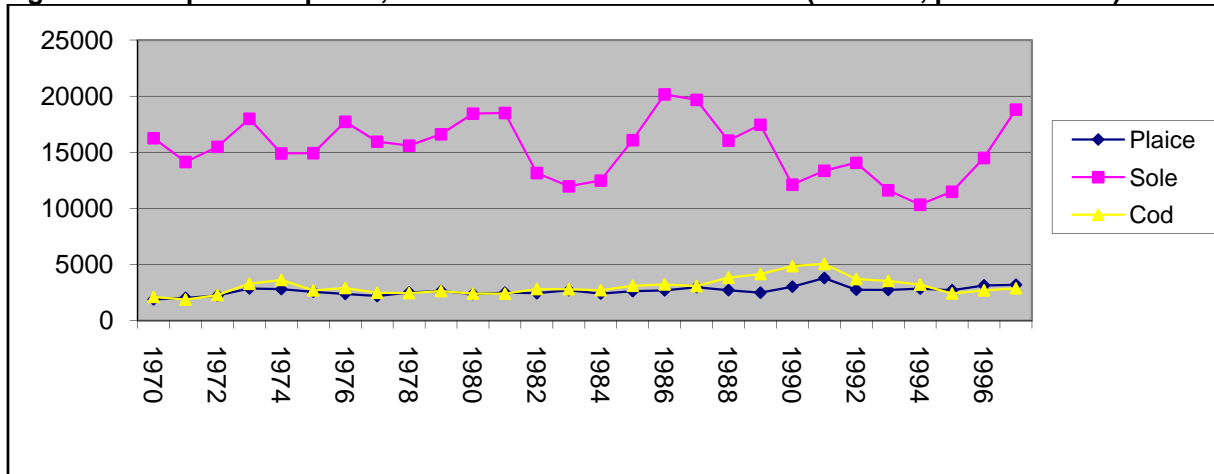
Source: MAFF, Sea Fisheries statistics, various issues

Fig. 2. Development of volume, real value and real prices of all wetfish in the UK, 1970-1993



Source: MAFF, Sea Fisheries Statistics 1995

Figure 3. Real prices of plaice, sole and cod in the Netherlands (NLG/ton, prices of 1987)



Source: LEI-DLO

To which extent quality is rewarded by higher price depends often on specific conditions: species, size, further processing, supply and demand of the day or of the season, availability of substitutes, etc. In any case it seems likely that improvement of prices paid to the fleets will have to be achieved through:

1. meeting quality requirements of the market (which requires being aware of them);
2. greater co-operation among the primary producers so that they can demonstrate themselves as a more powerful player in the market;
3. common effort for rational management so that the composition of landings in terms of sizes and species could be improved. This could lead to higher average prices.

2.3 Decreasing costs?

Several types of costs need to be distinguished, because attempts to decrease them may be of different nature: operational costs, labour, capital costs and a new item 'management costs'. As for the last item, the paper elaborates an apparent paradox. If the fishing sector would be willing to assume the full management responsibility and bear the management costs, its profitability may improve in the longer run.

- *Operational costs*

Operational costs can be decreased only by the introduction of more cost efficient production technologies. Low maintenance equipment, fuel-efficient engines, energy efficient hull design, etc. In this area the fishing sector largely depends on technological developments which take place elsewhere and are subsequently introduced into fisheries. In a situation of a large number of small producers with limited resources, it is difficult to initiate specific technological development, even though it may be seriously needed.

- *Labour*

Saving on labour is a 'politically' and emotionally difficult subject. Despite the continuous decrease of the number of fishermen all around Europe, the role of fishing communities along the European coast seems still to be on the political agenda.

However, just like in all other industries, also in fisheries labour is being replaced by capital on board as well as on shore. This trend will certainly continue in the future. It will lead to concentration of income from fishing in fewer and fewer hands and particularly in the hands of the vessel (capital) owners. It may be somewhat offset by the shortages of crews which have been apparent in various countries in the recent years. In order to attract best crews, skipper owners are already (and will be in the future) willing to offer higher shares.

Income to labour is beneficial to society as a whole, but at the same time it represents costs to the fishing firms. Labour costs depress profitability of capital. Policy makers attempt to promote and maintain employment in fisheries. This is in fact counterproductive when it comes to the perspective of

the firm. Promotion of employment is an issue of income distribution, but it may stand in the way of creation of an efficient fishing sector. This contradiction between private goals and public policy can be resolved only when the policy starts looking at the fishing industry as a normal economic sector and not as a kind of activity to be maintained for the sake of so called 'public concern', traditions and tourism.

- *Capital: how many boats?*

The question of overcapacity and overcapitalization in fisheries has been getting attention in theory as well as in practice. The subsequent Multi Annual Guidance Programs¹ have been in principle (and in practice) willing to support investments in capacity and at the same time various decommissioning schemes. Economists have repeatedly pointed out that this makes little economic sense. But, of course, it makes a lot of political sense, because a larger number of people (fishermen or companies) get access to subsidies at both sides of the spectrum of the sector: those wishing to leave as well as those intending to continue. The taxpayer does not have a great deal to say apparently.

Optimization of the size of the invested capital improves profitability of the whole sector as well as that of the individual firms. Lower investments mean lower depreciation and interest costs and possibly even maintenance costs, despite the fact that the each vessel of a smaller fleet would be used more intensively. For a smaller fleet there would be more fish per vessel and consequently higher revenues and income for the owner as well as for the crew. The optimum size of a fishing fleet will be determined by the productivity, which can be achieved. Analysis of the catches per unit of effort should give some indications in this respect. Such analysis becomes only possible and commercially relevant when the fishing companies are willing to cooperate (see also section 3).

The resentment about the MAGP objectives voiced by the professional organizations throughout EU is therefore counterproductive when it comes to the profitability of their own members. The argument of equitable income distribution (fairness) is apparently stronger than the pursuit of commercial sustainability.

- *Capital: size of fish stock*

Maintaining stocks required for regular production is, as in most industries, an integral part of the production process. In view of the amount of capital required for stocks, this topic is being given quite some attention. Production companies attempt to reduce the size of their stock by optimization procedures, 'delivery just on time', special arrangements with suppliers, etc.

In fisheries, fish stocks are somehow not viewed in this manner. The operation of the sector as a whole leads to reduction of stocks to a minimum level. However, this is not a result of a conscious policy, but rather of the 'common property' character of the fish stocks in the sea. It reflects 'race for fish' rather than a sound commercial calculation.

There is little reason why fish stocks in the sea should not be considered as stocks required for any other production process. Fish stocks should be valued on the balance sheets of the industry. Than they may be also used as collateral for bank credits required for any type of investment.

Investing in fish stock can be probably only done by putting off catches to later years. This means lower revenues and profits in the short run. This too is normal economic process. However, contrary to all other sector (apart from forestry) the value of the stock on the balance sheet will increase, without any cash expenses. In fact, further savings will be realized on operational costs of fishing, which would not take place.

Commercially rational use of fish stocks can be only achieved if the fishing firms are willing to co-operate.

2.4 Intangibles

The European fishing fleets enjoy today a number of intangible benefits: their access to the resource is free of charge and the management costs are born by the governments (i.e. taxpayers). This is in clear discrepancy when compared to the oil industry, which is a major contributor to the national treasuries. When it comes to fisheries, the usual argument is that the profitability is already too low and paying additional charges would create an even greater 'misery'. This, however, seems to

¹ Major pillar of the EU Common Fisheries Policy

be a result of only a very superficial assessment of the situation which could be potentially created. The few paragraphs below indicate that it might make sense financially if the fishing sector would 'get its act together' and assume full management responsibility.

- *Free access*

It is not an unusual phenomenon that when someone gets something free of charge he does not take great care. Apparently this 'something' is not of great value to the giver, so.... On the other hand when a payment is required, parties will negotiate to achieve an acceptable result for both. This may also apply to fisheries.

Today, the existing active fishing fleets have almost exclusive right of access to fish stocks thanks to various licensing schemes. Access to newcomers has been quite effectively curbed, possibly to the detriment of innovations. The value of the right of access is today contained in the prices of licenses or other fishing rights and the fishing companies who sell their 'historical track records' collect it. Many of them receive a payment for a 'good' for which they did not have to pay themselves, simply due to the fact that the government policies gave rise to new markets and new scarcity.

It is difficult to compare the current price of fishing rights to the possible cost of royalties imposed by the authorities. The current prices of licenses or track records are probably relatively high for two reasons. First, the companies buy fishing rights mostly in addition to the rights which they already have in their possession and which they were given free of charge. In this is so called marginal trade they can afford to pay more per unit of the fishing right (e.g. ITQ). Second, the price contains implicitly the discounted value of expected future benefits. When some authority would for example auction the totality of the fishing rights at any given time, the average price per unit will be almost certainly lower. The total costs of fishing rights in the accounts of a fishing firm may be higher when comparing to the situation today. These costs will be certainly lower when comparing to a situation where an entirely new company would have to buy all its fishing rights on the market now.

Willingness to negotiate the level of access fees will lead to deterioration of fiscal profitability in the short run, but over a longer period it could have some positive affects:

- The marginal enterprises would have to stop fishing. The funds obtained through the access fees could be used to alleviate the worst hardship caused in this way. Each of the remaining companies could receive a 'larger piece of the cake', which would benefit their profitability
- A smaller number of larger producers could be expected to push for more rational management, e.g. matching stock exploitation to market needs and commercial considerations of running a firm.
- Payment for access would also give the industry the right to have a greater voice in fisheries management. That could be one of the conditions to be negotiated.

In the current situation in the EU, it is not clear which institution could be possibly charged with auctioning the fishing rights and collection of royalties. However, this seems a technical problem, which could certainly be resolved once the required political decision has been taken.

- *Management costs*

The second intangible regards management costs: research into biology of stocks (results of which are often disputed by the industry anyway), policing a large number of measures (technical, catches, etc.), administration of licenses, etc. Greater involvement of the sector could lead to savings in this field. For example, fishing vessels may collect relevant data for stock assessment. This also applies to detailed information on landings (volumes by size category). Last, but not least the public image of the fishing sector would become more 'environmentally' responsible. Assuming management costs would imply having a greater say in management itself. This would in the end help to create a self-reliant industry, which would negotiate with the administrations on very different terms than today.

It is not unlikely that the management costs would be overall lower if assumed by the industry itself. If for example a fiscal rebate would be offered in return, the financial profitability may not be greatly affected (if at all) while the treasury would make net savings at the same time.

In the current situation it does not seem likely that the EU fishing industry is ready or interested to assume greater responsibility in fisheries management. Neither do the EU and national authorities seem inclined to allow such an involvement. Still, paying access fees and bearing management costs would put the industry into a stronger position to negotiate the broad framework and conditions of fisheries management. This should become financially profitable in medium and long term.

3. North Sea Fisheries Ltd.?

In order to demonstrate some of the arguments even more clearly, this section presents briefly a scenario in which the exploitation of the North Sea would be leased to one single company - the North Sea Fisheries Ltd. (NSF). For the sake of simplicity, the consequences regarding for example anti-monopoly and other regulations must be disregarded.

How will such a company operate in terms of its policies regarding personnel, investment, dealing with public authorities, satisfying its shareholders and building its public image? To name a few aspects of its management.

NSF can be expected to pursue two main objectives:

1. To satisfy the profit expectations of its share holders, or in other words to optimize its profitability; and
2. To adhere to the conditions of the lease contract.

The first objective is self-evident. The second could be also viewed as a main precondition for the continuity of NSF. The lease contract expresses in a formal way the public responsibilities of the company. To satisfy those responsibilities may be considered just as important as making profit. Therefore it is also taken as an objective.

The measures, which NSF can take to optimize its profits, can be discussed in a similar sequence to the previous section concerning the fishing sector as a whole. The main difference is, of course, that in the case of NSF the managing director is capable of making decisions for the whole company. In the case of the sector, decisions are negotiated or imposed by the government.

3.1 Profits

NSF may be expected to pursue the highest possible profits. This may be achieved by on-going monitoring of the net financial productivity of each individual vessel. Various indicators can be used in this respect, each serving its own purpose to improve the overall results: contribution margin, net profit, productivity, etc.

The ownership of NSF is well defined, therefore the question to whom the profits should accrue is not relevant. The timing of the profits is certainly an issue. Large corporations pursue survival in the long run, rather than maximum profits in the short run. In this respect the objectives of NSF would seem more in line with those of the society at large.

3.2 Revenues

Revenues may be optimized by giving attention to produced volumes and by negotiating acceptable prices. Volumes and prices are directly related to the quality required by the market. The quality requirements in all respects will be therefore a main issue to be analyzed and translated into the operations of the fleet. Dimensions of quality to be taken into account may be:

- availability in the right place at the right time (just on time delivery)
- appropriate presentation, product form and packing
- contribution to a positive marketable image of the product and production techniques.

Meeting the quality requirements of the chain will be achieved through close collaboration with the various chain links – processors, trade, suppliers, etc. The attention will shift from the characteristics of the product (fish) itself to provision of broad 'after sales support'. On-going market research will facilitate and direct product development.

NSF can be expected to be a reasonably powerful negotiator on the market; with willingness, capability and facilities to pursue actively win-win situations when dealing with other market parties. It may neither dictate nor fully accept market conditions.

Production process will be carried out as much as possible according to a predetermined plan, specifying how much will be produced, when, etc. In view of the fact that fishing cannot be fully forecasted, the plan will also contain options to deal with situations of shortage or excess of catches through maintenance of strategic stocks, arrangements with other producers, active trading, creation of futures market, etc.

The NSF will attempt to exploit the available fish stocks in a rational manner. What will be considered as 'rational' will depend on several considerations:

- obligations regarding stock management as set by the lease contract with the relevant authority

- realized physical and especially financial productivity of the fleet.

3.3 Production costs

- *Operational costs*

Level of operational costs will be closely monitored. Prices and delivery conditions will be negotiated on all inputs. Economies of scale will be exploited whenever possible, e.g. administration on shore. The scale of NSF may allow introduction of new technologies on experimental as well as operational scale in order to reduce production costs.

- *Labour costs*

Labour represents costs, which depress profits. Just like in all other sectors, labour saving technologies will be introduced in order to increase productivity. Number of employees and creation of labour income will not be an objective of the enterprise strategy, unless this would be one of the conditions of the lease contract.

- *Capital: physical investments*

NSF will attempt to avoid overinvestment. Using too much capital increases capital costs and reduces the profitability rate per unit of investment. The size and the composition (quality) of the fleet will be a result of investment plans, incorporated in the entire company strategy.

- *Capital: fish stocks*

Attempts to maintain fish stocks at an 'optimum level' in relation to short and long term business plan will be undertaken. Greater fish stocks imply higher densities and thus higher productivity of the vessels. Size of the fish stocks can be introduced as an asset on the balance sheet of the NSF. It will increase the value for the shareholders as well as the credibility for the banks. Contrary to stocks of spare parts, maintaining stocks of fish does not tie additional working capital, but only defers income and reduces cash flow in the short-run.

3.4 Intangibles

NSF will pay royalties for its right to exploit the natural resources of the North Sea. It will also have to bear costs of stock management. The task of the government authorities will be to guard the general interests of the public as specified in the lease contract. The precise indicators, which would be monitored by the government or an independent agency, are not an issue in this paper. How will NSF deal with the two types of mentioned costs in relation to its profitability?

Paying access fees has been suggested in economic literature repeatedly. The level and the calculation of the fee will have to be negotiated. Particularly the way of determination of the fee offers a broad spectrum of possibilities. It may be related to catches, earned gross revenues, profits, numbers of fishing boats, etc. Depending on the precise definition, the profit optimization approach to the management of NSF may be adjusted. In any case, excessive fees will make the existence of NSF impossible, which would be at the detriment of all parties involved (investors, government, consumers, etc.) Paying access fees or not will not be a matter of principle. Rather only its level would have to be negotiated. The negotiation would take place on the basis of data provided by the NSF and/or collected for the government by a research institute or another body.

When it comes to management costs, it may be expected that the approach followed by NSF would be just as businesslike as when it regards costs of operations. Management costs would be considered as an integral part of the production process and therefore an economic approach would be pursued. This may mean in practice that:

- basic data would be collected by fishing vessels, not necessarily special research vessels
- catch monitoring would be carried out by internal procedures

The NSF may also try to develop some new 'environmental monitoring products' for new clients in order to boost its income further.

3.5 Management of NSF

The NSF will have to develop an effective management scheme, within which it will be specified who is precisely responsible for what in the organization, the way of remunerating the skippers and the crews, etc. Some decisions will be taken at central level, while others will be decentralized. The latter will probably primarily refer to the operations of the vessels at sea, although giving directions as to target species (based on market demand) may well be centralized.

It is not quite likely that the consideration of 'maintaining fishing communities' would be at the forefront of NSF's strategy. The operations will be certainly based in ports with relevant location between fishing grounds and markets. If necessary the crews and their families will be expected to relocate.

4. Conclusions

Comparison between the current situation of an atomized catching sector and the exploitation of the North Sea by a single company is presented in the table below:

Criteria	Current situation	North Sea Fishing Ltd.
Objective	Mix of economic, social and environmental considerations.	Profit maximization, under specific lease constraints.
View on economic benefits	Value added, employment.	Profitability of investment.
Revenues	Coincidental result.	Optimized on basis of productivity.
Volume of catches	Determined by TACs and nature.	Set by market demand and management considerations. Catch based on production plans.
Prices	Auctions.	Negotiation.
Operational costs	Limited optimization on individual basis.	Negotiated prices of inputs. Exploitation of economies of scale. Introduction of new technologies.
Labour costs	Employment and labour income are part of the objectives of the CFP as means of income distribution.	Labour costs will be optimized. Labour will be replaced by capital in order to increase productivity.
Capital costs	Vessel ownership is means of distribution of benefits (equity argument). Trend to overinvestment. Fish stocks do not make a part of firms' capital.	Investments based on an overall view on operations and attainment of the objective. Fish stocks considered as one of inputs which have to be dealt with accordingly.
Access fee	Difficult to determine an acceptable level. Negotiation is political rather than economic.	Negotiated and based on commercial sustainability of NSF and general interests of the government.
Management costs	Organization is complex.	Clear division between responsibilities of NSF and the government.

The above analysis may be certainly criticized for a variety of reasons. Mainly because it does not take into account what is perceived as current constraints or 'realities'. It presents the consequences of the prisoners' dilemma in terms of economic comparison between current situation and a scenario in which one company would acquire the sole rights for exploitation of the North Sea. This comparison points to various possibilities to optimize the profitability of the existing fishing sector. However none of those possibilities can be fully exploited unless there is willingness for cooperation among the fishing companies.

Greater cooperation should lead to:

1. Strengthening of the position on the markets for fish as well as for inputs.
2. Rational investment policy and optimization of the size of the fleet.
3. Rational stock management as part of business practices.

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