

NEW ZEALAND CASE STUDY

INSTITUTIONAL EFFECTS OF THE INTRODUCTION OF INDIVIDUAL TRANSFERABLE QUOTAS (ITQs)

Preamble

Whether fishermen support or oppose particular fisheries policies can be seen partly as a function of the institutional arrangements that govern fishing generally. The legal environment, the political and organisational structures, and particularly the property rights which exist, all influence how fishermen will react to particular policies. In turn, fishermen operate within these legal, political and other institutions to determine substantially whether various policies can be successfully promoted and implemented. Accordingly, it is highly desirable to analyse technically how various institutional arrangements might impact on the incentives and institutional behaviour of fishermen.

Introduction

In this report, we examine the impacts of one particular change in institutional arrangements -- the introduction of a tradable property right for harvesting. Specifically, we examine how the introduction of Individual Transferable Quotas (ITQs) might modify the stance and institutional behaviour of fishermen towards:

- free trade in fish services;
- reductions in catch levels;
- compliance with management regimes;
- changes in fishing regulations.

In illustrating the conclusions, we will draw on New Zealand's experience with the introduction of the ITQ system.

Property rights

Before turning to the case studies themselves, we examine the general attributes of property rights, and the incentives they create. To a large degree, the institutional effects of ITQs are simply a special case of the general effects of property right structures. This general examination will also provide some guidelines on the design of ITQs as a property right to optimise any desired institutional effects.

General attributes

Following Anthony Scott (in *Marine Resource Economics* Vol. 5 1988) property rights display 6 attributes:

- duration;
- flexibility;
- exclusivity;
- quality of title;
- transferability;
- divisibility.

Different property rights will exhibit these attributes to different degrees, and indeed some may lack particular attributes altogether. However, a "strong" property right would rate highly on every count.

In addition to these general attributes, every property right has layers of specific characteristics which distinguish it from other property rights, and determine its underlying value. In the case of an ITQ these characteristics are the right to take a certain tonnage, of a certain species, in a certain area. A shareholding in a company, another kind of property right, could be described as a right to dividends, and a right to vote for the directors. So far ITQs have not had added to them voting rights for collective decisions by quota holders, but this development is conceivable as part of the specific characteristics of the property right.

Major incentive effects of property rights

In very general terms, property rights create economic rents, and therefore lead to rent-enhancing and rent-protecting behaviour by property right holders. The larger the rents at stake, the more quota holders will co-operate with each other, take collective legal and political action, and make financial sacrifices of all kinds, to secure and enhance their asset value. The rents which generate these effects come about from an interaction of the general attributes of property rights.

Exclusivity implies a scarcity value for the property right, and is therefore the fundamental creator of economic rent. Without exclusivity, the scarcity value would be dissipated over time by new entrants; the property right would eventually become valueless, and cease to exert influence on the behaviour of the holder. The exact value generated by the scarcity will be a function of the residual profits after all other factors of production have taken their share.

The transferability of an exclusive right translates this scarcity value into a market value. Rent will represent not just the value to the individual, but to a whole market of individuals. Importantly, transferability means changes in the underlying value of the asset will affect every individual to the same degree, independently of their personal circumstances and plans. So, in the case of an ITQ, a fisherman contemplating retirement in the next year would have the same stake in the ongoing fishery, as a new entrant.

The value will also have a time dimension dependent on the durability of the property right. A perpetual property right will have a market value that represents the capitalised sum of all future expected profits from the use of that right. Together with the attribute of transferability, durability ensures that the market value will capture the expected valuations of all future holders of the right.

The market value of the property right will also depend on how easily the property right is divided, its degree of flexibility, and the quality of title. The stronger the property right is in these attributes the higher the rent generated.

In general, the extent of economic rent depends on the strength of the property right in each of its six general attributes. To the extent that policy-makers wish to enhance these economic rents and their associated incentive effects, they must design the property right structure with particular care, especially with respect to exclusivity, transferability and durability.

Case studies

Having given a broad overview of the general features of property rights, we turn to ITQs in particular, and the New Zealand case study. We will look at the theoretical effect of ITQs with respect to a selected group of policies, followed by a commentary on the New Zealand experience.

Of necessity, the commentary will be of an anecdotal nature, with all the dangers that this entails. Accordingly, the comments should be seen as one particular analytical viewpoint, rather than the position of the New Zealand government or of New Zealand quota holders.

It should also be noted that currently New Zealand ITQ does not necessarily rate highly on all attributes of a strong property right. For example, because of uncertainty over resource rental policy, quota holders do not have exclusive rights to future profits from the property right. In terms of durability, the rock lobster fishery has only a 25 year term for quota. Improvements in flexibility and quality of title of quota are also needed to facilitate borrowing against quota holdings. Accordingly, New Zealand experience may only foreshadow the full institutional incentives that a stronger ITQ property would elicit.

Individual transferable quota

For the purposes of the theoretical analysis, we will assume an abstraction of the type of property right which exists in practice. We assume there is a total allowable catch which is set by the controlling fisheries authority. This total allowable catch (TAC) is divided into individual transferable quotas (ITQs). Although resource rentals exist, it is expected that these will be held at a steady level. Accordingly, increases and decreases in expected future profitability will be fully capitalised in the value of the quota. Finally, the quota is freely tradable in any sub-division, and increases and decreases in the TAC are allocated on a proportionate basis to quota holders.

Free trade in fishing services

In the absence of ITQs, domestic fishermen would be expected to oppose the free access of foreign charter vessels to the EEZ. By advocating the ban of foreign harvesting services, they could potentially sustain a higher market value for their own harvesting assets, e.g. their vessels, processing plant and any particular expertise they have developed. Market values would be determined by domestic,

rather than international, costs of providing extra capacity. They would also ensure reduced competition for the fishery, slowing down the rate of depletion of the stock and allow for greater rents to be extracted from down-stream processors, and consumers.

However, once ITQs are in place, domestic fishermen will have another asset from which they would like to maximise profits. In general, they will achieve the greatest profits through access to cheap catching and processing services. If foreign fishing services are relatively cost effective, quota holders would have a strong incentive to gain access to those services, as the best way to maximise their profits and the value of their quota holding.

The introduction of ITQs, therefore, leads to conflicting incentives within the domestic fishing industry about whether to support or oppose the use of foreign harvesting services. On one hand, they would like to maximise the value of their fishing assets, on the other hand, they would like the greatest value from their quota holdings. While theoretically the net effect is indeterminate, certainly quota holdings would tend to counteract the natural tendency to oppose the use of foreign harvesting services.

The New Zealand experience

New Zealand's experience is very much what would be expected. To date, the industry has managed its public relations to ensure that the use of foreign harvesting services, per se, has remained politically uncontentious. To some extent, they have focused attention, instead, on a goal of moving foreign vessels from government bilateral agreements to industry charters. Current export statistics register this transfer favourably as an increase in domestic exports.

In terms of an overall direction, the industry supports an increase in domestic harvesting and processing as a desirable goal. But, it has largely resisted the idea of government compulsion. Instead, members have argued "New Zealandisation" programmes should focus primarily on reducing market access barriers. They also make the point that a viable New Zealand processing industry must rely, to a degree, on access to cost effective foreign harvesting services.

There is only one set of fisheries which has special constraints against the use of foreign charter vessels -- the tuna/billfish fisheries. For skipjack tuna, a ban was recently placed on foreign purse seine vessels operating within 18 miles from the shore. However, special factors applied here. Significantly, tuna is one of the few commercial fisheries not yet on the quota system. Accordingly, the usual countervailing incentives associated with quota holding did not apply. Even in this case, the industry was divided on the issue. Perhaps the potential for catch histories to determine ITQ allocations in the future formed a type of property right in itself, and produced similar incentives.

Reduction in catch levels

Fisheries around the world are characterised by the need to reduce catch levels to improve environmental and economic outcomes. An ITQ system can assist in gaining industry support for such reductions.

- Most importantly, ITQ will instantly capitalise the full value of any prospective economic gains from the future recovery of a stock. All quota holders will receive their gains, not just those who choose to remain in the fishery. Indeed, if the increase in the market value of quota

outweighed the short-term adjustment costs, quota holders might be expected to actively support the reductions, in order to maximise their net wealth.

- The market will ensure that the cuts are made efficiently. Transferability means those who can reduce their catches easily will transfer quota to those who cannot.
- Divisibility of quota lowers the costs of cutting catch levels. One option for reducing catch levels is to retain the same catching capacity, but use it only at the peak times of the season, when catch per unit effort is at the optimum.
- The government can offer to buy back quota. Quotas define a uniform basis of compensation and give confidence to the government that such an expenditure would achieve the reduction in catches in both the short and long-term.

The New Zealand experience

New Zealand has had some limited experience with attempts to reduce catch rates via the ITQ system, both with and without government compensation.

In 1986, large reductions in catches were made to the inshore fishery. These were effected by the government allocating ITQ on an historical catch basis, and then buying back quota by tender to the desired catch levels. The link between the introduction of the ITQ system and the buy-back was probably a critical factor in the industry's acceptance of ITQs for the inshore fishery.

In another case where compensation was involved, the government transferred 10 per cent of all quota holdings to the indigenous people of New Zealand, the Maori. Because the government purchased quota at market prices from existing quota holders, the industry reluctantly supported the transfer.

In the absence of full government compensation, New Zealand's experience has been mixed. To the extent that the speed or level of proposed reductions have been seen as uneconomic by the industry, they have resisted a number of recently proposed reductions.

On the other hand, there are cases where quota holders have called for TACs to be restricted, or have supported a reduction in catches, especially where the TAC is relatively non-binding.

Moreover, there is some evidence that key quota holders have implicitly restricted their catches below the TAC set by the government. For example, in the hoki fishery, catches made by the industry comprise only 80 per cent of the TAC. Positive market values for hoki quota indicate that the fishery is not in an open access situation, and more fish could be taken if the industry wanted. Although other explanations are possible, it appears the industry may be supporting restrictions on catches by voluntary agreement. This may prefigure more explicit action by quota holders in the future to reduce catches voluntarily in order to enhance the resource.

Only long-term experience will indicate the full extent to which quota holders will propose cuts in quota to restore fisheries. Some changes are likely to be required to the New Zealand legislative framework to enhance the incentives on quota holders to support desirable catch reductions.

Compliance with management regimes

Without a great deal of industry support, it becomes prohibitively expensive, or impossible, to make any management regime work effectively. In this respect, the ITQ system has the advantage of an in-built protection of its fundamental integrity. Under an ITQ system, adequate enforcement not only protects the fish stock, it also protects the value of the asset held by quota holders. If the majority of the industry were to defy the ITQ system to the extent it became unworkable, they would all sustain large losses in their asset backing. This same consideration also generates industry support for strong enforcement measures and heavy penalties to support the worth of their asset.

The New Zealand experience

Due to the ad hoc development of fisheries legislation in New Zealand, the New Zealand ITQ legislation has become relatively complex and unwieldy. The administrative systems within the government, and indeed within the industry itself, struggle to cope with this complexity. It would be very easy to bring the system to a standstill over technical points and legal uncertainties. Some commentators suggest that the only reason the system has survived so well is the considerable investment that fishermen have in ITQs, and therefore their goodwill not to push the current system to the limits.

Moreover, in terms of enforcement, the industry has supported increased government action and severe penalties against those violating the system. For example, the government recently increased the maximum penalties for fishing offences from NZ\$ 10 000 to NZ\$ 250 000. Along with higher penalties, both the Courts and the government have become increasingly severe in their application of the legislative provisions relating to property forfeiture. These developments have been very much supported by the industry itself. The industry is also beginning to supply intelligence information on breaches of the law in a way which did not occur prior to the introduction of ITQs.

Changes in fisheries regulations

As discussed in the context of catch reductions, the introduction of some fishing controls will be made easier under ITQs. However, there are other controls which will be much harder to introduce. Regulations to protect by-catch species (e.g. marine mammals) and to preserve recreational and environmental values might be expected to decrease commercial profitability.

Under open access fishing, a reduction in profitability due to the imposition of a regulation on fishing activity is swamped by the general dissipation of profits through overfishing. Fishermen have little incentive to fight for profits which are only temporary anyway. Whatever the regulations, in the long-term the fishery will always head for a long-run equilibrium of zero profit. This situation may assist the government in gaining industry acceptance of commercially detrimental fishing regulations.

In contrast, under ITQs, such regulations would lead to a permanent fall in profitability, and so an immediate fall in the market value of their ITQ. In the absence of compensation, the industry might be expected to vigorously oppose the introduction of such regulations.

The New Zealand experience

It is too early to draw too many specific lessons from the New Zealand experience.

Nevertheless, in general terms, the introduction of ITQs has coincided with a marked increase in the level of industry resistance to any government actions which are seen as commercially detrimental. For example, in 1990, the industry filed Court proceedings against the Crown for a wide range of grievances concerning Crown management of the resource.

Further, the introduction of certain types of regulations has become less feasible in view of likely industry responses. Proposals to reduce the size of current Quota Management Areas, e.g. to introduce commercial "no-go" areas to protect recreational or environmental values are particularly problematic. Under current fisheries law, quota holders are able to take court action to prevent any change in Quota Management Areas which would significantly affect their ability to harvest their quota. This possibility has constrained government actions in the past, and may do so in the future. Whether or not the property right is protected in law, as in the case described, regulations which decreased the value of an ITQ might still be expected to be difficult to implement due to strong opposition from right holders.

Conclusions

The value of the ITQ system as a tool for managing fisheries has long been recognised. Through transferability of individual quotas they allow a given total allowable catch to be harvested in the most efficient way. What has been less recognised is how the introduction of a property right changes the institutional environment in which fisheries' policies are formed and implemented.

By creating capitalised rent in a fishery, the ITQ system creates very strong incentives for quota holders to preserve and increase the value of their quota.

This behaviour is likely to make certain policy initiatives much easier to achieve. These include initiatives to free up the international trade in fishing services, to reduce catches in order to improve commercial profitability, and to introduce and maintain supporting administration systems.

However, policy initiatives which have a negative impact on profitability of quota holders will be much more difficult to realise. Explicit compensation is likely to be required in order to obtain the desired outcome.

The costs and benefits of these institutional effects should be a key consideration when assessing the merits of introducing an ITQ system, and in designing an appropriate property right structure.