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Individual transferable quotas in world fisheries: Addressing legal and rights-based issues

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ABSTRACT

Individual transferable quotas (ITQs) have reduced overcapacity and increased profitability in many fisheries, and have sometimes helped to reduce overfishing. ITQs are designed almost entirely on the basis of economic theory, however. This paper assesses ITQs from the viewpoints of four broader analytical frameworks: the interactive governance approach (IGA); the social-ecological systems (SES) framework; the ecosystems approach to fisheries (EAF); and the legal and rights-based paradigm. When viewed from these perspectives, ITQs are seen to involve several real and potential problems. These problems include concentration of ownership and the loss of SSFs; failure to make use of non-economic modes of governance; risk of ecological damage and overexploitation, and unfairness to the public as the owner of the fish.

Nevertheless, ITQ schemes can be modified in ways that reduce the potential negative impacts while still retaining the structure and economic advantages. This paper describes four possible changes: reserving quota share for traditional fisheries and/or SSFs; explicitly imposing a duty of stewardship on quota holders; implementing fees or royalties rather than granting ITQs for free; and cooperative regulation. For each proposed change, the problems and weaknesses which it addresses are identified, and the potential effectiveness of the solution is discussed.

1. The case for ITQs

1.1. Theory and objectives

The Individual Transferable Quota (ITQ) system is one of many regulatory approaches that attempt to both increase the economic benefits and improve the environmental sustainability of fisheries. Both open-access fisheries and fisheries that are managed using methods such as limiting the number of licences or the length of the season have historically suffered from both overcapacity, an economic problem, and overexploitation, a sustainability problem (Greboval, 1999). These problems have led to the decline or complete collapse of numerous important fisheries throughout the world (Kooiman and Bavinck, 2005).

Under an ITQ system, a fisheries regulator determines a total allowable catch (TAC) for a particular fish stock. This aspect is not unique to ITQ systems: Many fisheries that are regulated using licences and/or limited seasons also set a TAC, and shutdown access to the fishery when the TAC is reached in aggregate. ITQ systems differ in that they divide the TAC into individual catch shares (individual quotas, or IQs), each of which is defined as a percentage of the TAC. These IQs are then allocated to individual fishers, fishing companies, co-operatives, communities, and/or aboriginal bands; each IQ grants the quota holder an exclusive right to catch the amount represented by that IQ.

The difference between TAC-based regimes without IQs and regimes which use IQs is fundamental: If a TAC is not divided into individual shares, each fisher is entitled only to whatever amount he can catch before the total fleet reaches the TAC. If a TAC is divided into IQs, each fisher is entitled to that share regardless of the actions of the rest of the fleet. If regulations allow IQ holders to sell, buy or lease their quotas, then the quotas are individual transferable quotas, or ITQs. Most but not all IQ schemes allow at least some trading to occur, and so most of these schemes are in fact ITQ regimes.

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IQs and ITQs are expected to reduce overcapacity in several ways. First, each quota holder has a guaranteed right to catch his quota, regardless of what other fishers do. This contrasts sharply with fisheries management schemes under which the season is closed as soon as the TAC is reached, but fishers do not have individual quotas. Under those schemes, fishers do not earn any income unless they win a "race to fish". This in turn means that they must have enough capacity to catch an adequate number of fish very quickly. This is, of course, far more capacity than would be needed to catch the fish over a reasonably long season. Because IQ and ITQ holders are guaranteed the right to their catch, they do not need to race, and they do not need to overinvest in more gear and larger boats (Grimm et al., 2012). This advantage exists whether the IQs are transferable or not.

ITQs, but not non-tradeable IQs, may also reduce overcapacity by driving some less efficient fishers to leave the industry. This is the logical result of tradeability. ITQ proponents argue that trading will lead to greater economic efficiency, because the fishermen who are most efficient will enjoy the lowest costs, and so will be able to place the highest bids for ITQs (Grimm et al., 2012).

IQs may also reduce or reverse overexploitation of fish stocks, because their permanence gives the IQ holder an economic incentive to fish in a way that ensures the future productivity of the stock. According to this reasoning, the IQ holder will receive more financial benefit if the stock remains healthy and productive, no matter whether he intends to use the quota or sell it. If he intends to use it, he would suffer economic losses if the stock were to disappear. If he intends to sell it, the selling price would be lower if buyers knew that the stock was likely to deteriorate.

The belief that this incentive to conserve derives largely from the permanence of the IQ (more specifically, from the permanence of the right to catch fish that is granted by the IQ) is one of the main reasons for making most IQs transferable. If an IQ is structured so that it is truly not transferable, then the right to catch associated with that IQ will expire whenever the holder leaves the fishery. Therefore, if the holder of non-transferable IQ plans to stop fishing in the near future, the health of the stock after that date becomes economically irrelevant to him. In contrast, if the quota is an ITQ, the expected health of the stock after the holder stops fishing is one of the primary determinants of the selling price of his ITQ. Thus, transferability makes the future health of the stock highly important, even from the viewpoint of a fisher who is about to leave fishing entirely.

In the view of ITQ supporters, fishers under an open access regime exhaust the stock because of the economic incentives that such a regime creates. Under open access, poorly defined property rights lead to overexploitation because of the economic dynamics of the "tragedy of the commons" (Hardin, 1968). A fish stock is shared, but in the absence of regulation, each fisher owns only those fish that he can catch. According to Clark (1973) and Eggert and Ulmestrand (2007), this fact about an open-access fishery implies (at least in theory) that fishermen can only care about their own catch today, not their potential catch tomorrow or in the more distant future. ITQ advocates argue that ITQs enable fishers to be sure that they will receive future benefits if they conserve now, and that this will encourage wiser behavior (Trond Björndal and Munro, 1999; Grimm et al., 2012). As Ziff (1996) puts it, "Private property can operate to reduce the ability of an owner to shunt off costs onto others. In the language of economics, private ownership can reduce social costs or 'negative externalities'."

Ostrom (2007) used a multivariable diagnostic framework for social-ecological systems to confirm that the conditions of a capture fishery are very similar to the conditions of Hardin's original scenario, with one significant difference: the basis for ownership is capture rather than long-term possession. Given these conditions, Ostrom's analysis predicts overharvesting and destruction of the ecological system. Berkes et al. (2006) have confirmed empirically that this happens in coastal waters.

Most ITQ schemes involve substantial enforcement effort, such as mandatory cameras on fishing vessels and physical dockside checks. According to some economists, this demonstrates that ITQs are not creating a strong enough motivation for fishers to make voluntary conservation decisions (Bromley, 2009). These critics argue that fishers do not perceive their IQs as reasonable guarantees of significant long-term value, because they expect that the fish stock could easily be destroyed by some factor other than overfishing, such as climate changes or pollution.

Others argue against this interpretation on at least two grounds. First, especially in the light of the management failure of many of the regimes that existed before the introduction of IQs, it appears likely that enforcement had been inadequate in the past. If this is true, then the additional enforcement effort that accompanied the introduction of IQs would have been equally necessary if the previous regime had remained in place (Grimm et al., 2010).

Second, the presence of enforcement does not in itself mean that the rules or laws being enforced are failing to set up the right incentives. For example, the fact that contracts need enforcement in order for a contract-based legal system to work properly does not mean that contracts fail to motivate good economic behavior; it just means that contracts without adequate enforcement are not really contracts. Similarly, if there is not enough enforcement to ensure that a fisher will not exceed the amount defined by his IQ, then it can be argued that the IQ is not really a quota. Hilborn et al. (2005) suggest that the inability to enforce quotas explains why an IQ scheme in British Columbia's abalone fishery failed, even though several other IQ regimes in the same area have succeeded.

1.2. Empirical evidence of benefits

Several fisheries have been rescued from extreme overcapacity by the introduction of ITQs. Munro et al. (2009) describe the serious deterioration of Canada's Pacific halibut (*Hippoglossus stenolepsis*) and sablefish (*Anopoploma fimbria*) fisheries between 1979 and 1990 under a limited entry scheme with an industry TAC and no individual quotas. By the end of the 1980s, fishing capacity was so excessive that the entire sablefish TAC was caught in only 14 days in 1989, and the entire halibut TAC for 1990 was landed in six days. Misreporting, wastage, and "gear wars" were widespread. Because the short season allowed such a small window of opportunity, fishers were forced to put their vessels and themselves at risk by fishing regardless of the conditions. By 1988, the halibut industry was in such economic distress that fishers asked the regulator to consider implementing individual quotas.

The introduction of ITQs in 1990 for sablefish and 1991 for halibut rapidly brought the capacity of Canada's fleet back to a reasonable level. This was demonstrated in at least two ways: season length and the numbers of active vessels. Almost immediately, the sablefish season lengthened to 350 days, and the halibut season to 250 days. In both fisheries, the number of active vessels fell by 40–50% over the first 2–5 years (Munro et al., 2009). Grimm et al. (2012) analyze 15 U.S. and Canadian fisheries in the north Pacific, and show that numerous economic measures related to overcapacity improved after the introduction of ITQs. On average across the 15 fisheries, fleet capacity declined by 95%; per-boat catch tonnage increased by 86%; season length increased from 84 to 245 days; and per-boat revenue increased by 79%.

ITQs have had mixed results with respect to reducing overexploitation and protecting fish stocks. Munro et al. (2009) show that the incidence of TAC overages declined significantly in the Canadian sablefish fishery after the introduction of ITQs. For the 15