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Transactions costs as an obstacle to fisheries self-governance in New Zealand

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When faced with opportunities for greater self-governance, the New Zealand fishing industry managed to make only limited progress. Why industry was unable to progress self-management more effectively remains an interesting question. This paper argues that the benefits of greater self-governance were probably less than the significant transactions costs to self-organise. The benefits were probably smaller in New Zealand than elsewhere, because reform had already reduced the costs of fisheries administration. And the transactions costs confronting industry were substantial. First, unanimous agreement was required for self-governance, which created high transactions costs. Second, the tools for private enforcement were limited. Third, policy failed to specify clearly the expectations of self-governance, so the investments in self-governance are unusually risky. The government had unrealistic expectations that self-governance would solve third-party environmental externalities as well as fishing externalities. This implied high transactions costs to negotiate with third parties, such as environmental groups. Fourth, the standards for accountability were difficult to specify. This experience identifies four key policies if devolved fisheries governance is to be promoted: non-unanimous decision-making; private enforcement; clarity on areas for self-governance; and clarity on accountability standards.

Key words: fishery economics, New Zealand, self-governance, transactions costs.

1. Background

New Zealand has made the world's most comprehensive commitment to individual transferable quotas (ITQs). All major fisheries are under its quota management system (QMS). A recurring issue for the QMS has been the appropriate role for the quota rights owners in management. In several instances, New Zealand has delegated important aspects of management to industry. But progress on self-governance has been relatively limited, despite enabling legislation and a period of clear support for the concept by both government and industry. The inability of the New Zealand industry to achieve greater self-governance has relevance to the wider academic and policy debates over the appropriate industry role in governance of ITQ fisheries. This analysis argues that the high transactions costs of the self-governance

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model in New Zealand, coupled with relatively modest potential benefits, probably explain the slow progress on self-governance. Understanding these transactions costs is important, because the legal framework for governance can substantially reduce those transactions costs.

2. Improving the economic benefits of ITQs through self-governance

The economic benefits of ITQs are widely appreciated. ITQs are a straightforward application of cap-and-trade regulation to fisheries. The unresolved issue for economics is whether ITQs can or should evolve into more comprehensive property rights. The perspective on this issue hinges largely on whether one takes a static or dynamic view of fisheries management problems. ITQs provide a highly efficient regulatory solution to the static problem of efficient harvest of a fixed quota (usually a government-set 'total allowable catch', or TAC). But from a dynamic perspective, fisheries management is much more complicated than simply how to harvest a TAC. Optimal management requires complicated decisions to manage a dynamic age-structured population through time and space (Beverton and Holt 1957). The question is whether ITQs provide the basis for transferring some part of this dynamic management problem from government to industry.

This analysis distinguishes self-governance from other forms of 'co-management'. This varies from a common conceptualisation of self-governance as one end of the spectrum of co-management (*e.g.*, Sen and Nielsen 1996). That 'spectrum' conceptualisation suggests that self-governance varies from other forms of co-management only in degree. This analysis examines how different institutions affect transactions costs of decision-making over resource use. Economics has conceptualised public institutions, however power is shared, as having different transactions costs than private property institutions. Specifically, private institutions are able to avoid the high transactions costs associated with rent-seeking and other sources of government failure.

Private owners who self-govern might improve on government management in a number of ways. First, private owners could devise rules to manage the various avenues of rent dissipation that are identified by Costello and Deacon (2007). Second, private decision-making can solve many issues of implementation and enforcement more efficiently than government. The industry better understands how regulations affect operations and the private incentives that are created by such regulations. The industry may be able to detect violations more easily and may have sanctioning options that are not available to the government. Third, a number of efficiencies in administration and in research may be available to the industry. Canada's experience with private dockside monitoring has shown that routine administrative tasks can often be performed at substantially lower cost by the private sector. Conducting research on research vessels ('fishery-independent platforms'), the historic approach of government scientists, may be much more expensive

than generating similar information concurrently with fishing activities. Fourth, owners can incorporate information from markets, such as changes in prices and costs, into the decision-making process. Optimal management depends not only upon biological considerations, but also upon economic considerations. Industry is much better positioned to incorporate these economic factors into decisions than government.

While there are good reasons to expect private owners to improve on management in a number of areas, government will retain a major role in fisheries governance. The question is how to delineate the areas where industry takes responsibility and areas where government retains responsibility. This delineation must consider at least two factors. First, what are the transactions costs of private versus public provision of management services? In one important area, enforcement and compliance, government has much lower transactions costs because it has access to police powers and criminal sanctions. ITQ owners face a collective action dilemma as joint owners of rights derived from the same underlying resource, the stock of fish. It is an empirical question whether public decision-making, with its access to police powers, may have lower transactions costs of solving this collective action problem. Second, for what decisions do private property rights create incentives to maximise social value from the resource and for what decisions do private rights fail to align social and private incentives? Economic theory provides a relatively clear answer to this question. A set of owners of a fishery resource has private incentives to solve the 'pool' fisheries externalities but they do not have incentives to solve 'downstream' environmental externalities (Haveman 1973). For example, a set of ITQ owners have an incentive to manage discards of their own stock, but they do not have incentives to manage incidental mortality of birds and marine mammals.

The idea that a set of resource users could make collective decisions was raised by Scott (1955), and Scott (1988) has specifically suggested that ITQ ownership could become the basis of some form of collective sole ownership institution, such as a corporation. But economics has just begun to analyse the obstacles to such collective decision-making by ITQ owners. Although ITQs substantially reduce the rent losses of open access, individual ITQ owners still have incentives that are not aligned with joint rent maximisation. The incentive to underreport landings is the most obvious. A second problem is that individual ITQ owners have inefficient incentives with regard to discards, because they do not bear the full future costs of discards and they do bear the full costs of changing fishing behaviour to lower discards. So ITQ owners have the usual pool collective action dilemma: How do they make coordinated decisions to maximise the total size of the pool in the face of individual incentives to avoid any costs associated with collective restrictions? This analysis of self-governance uses the New Zealand experience to argue that the transactions costs of alternative self-governance institutions are very important to resolving these residual collective action problems, because the

transactions costs of self-governance must be lower than the benefits achieved if self-governance is to be feasible.

3. Fisheries self-governance in New Zealand

Hersoug (2002) provided the first comprehensive description and assessment of the self-governance experiences under the QMS (Hersoug 2002, pp. 169–192). Hersoug (2002) concludes that greater self-governance in New Zealand seems promising from a narrow view of improving commercial utilisation but faces serious obstacles in a multi-stakeholder environment. Similarly, Bess and Harte (2000) found that the experience with self-governance had been promising but limited. Bess and Harte (2000, p. 338) do express rather stronger confidence for the future, because 'at every major crisis the property rights-based fisheries management system has emerged stronger and better specified'.

To understand self-governance in New Zealand, it is useful to divide those experiences into four groups. The first group is comprised of Commercial Fisheries Services (almost universally known as 'FishServe') and Challenger Scallop Enhancement Company ('Challenger'), which are the only two cases of comprehensive self-governance. The experiences of these two institutions have largely framed the debate in New Zealand over the direction of fisheries self-governance. The second group is comprised of rock lobster ('crayfish') and deepwater fisheries, where effective co-management is well established. There are some limited aspects of self-governance in both fisheries, but there are no apparent signs that self-governance is expanding beyond a narrow scope. Third, in a number of shellfish fisheries, including Bluff oysters, surf clams, deepwater crabs, geoducks, paua, and some scallop fisheries, there have been tantalising steps towards self-governance, but none have yet approached the comprehensive model of Challenger. Finally, in the rest of the fisheries and most notably in inshore finfisheries, there is little or no evidence of progress towards self-governance.

For administration of the day-to-day accounting functions of the QMS, devolution is a reality (Harte 2007). The Fishery Act 1996 and the Fisheries Amendment Act 1999 provided the legislative basis for allowing the industry to assume these administrative services. Industry and government engaged in a protracted process of negotiation to devolve those functions in 2001. FishServe, an industry-owned service bureau, now provides complete record-keeping services for licensing, permanent quota share transactions, annual catch entitlement transactions (the annual landings rights derived from the quota share, called 'ACE'), landings against the ACE, and deemed value payments (discussed below). FishServe collects and remits to government any fees due to government under these transactions. The relationship between the Ministry and FishServe is a combination of devolved provision of some services and contracted provision of others (especially for compliance-related functions that cannot legally be devolved). That system has functioned to the

satisfaction of both government and industry since 2001. For example, the cost of registering an ACE trade electronically at FishServe has fallen from NZ$16.65 in 2001 to NZ$11.25 in 2009. The general assessment has been that FishServe has indeed been more efficient in the delivery of services (Harte 2007; Shallard 2008).

Some might object that administrative services are, at best, a mechanical feature of fisheries management and that, therefore, the FishServe experience has limited relevance to core fisheries management. That assessment underestimates the significance of the FishServe experience for two reasons. First, the process of establishing FishServe indicates that any transition to self-governance will involve large investments by both government and industry. Devolving even this straightforward administrative function required about 5 years. Second, in the process of defining how to transfer administrative services, government and industry clarified and streamlined the fishing rights in ways that reduced transactions not only for FishServe, but also for the fishing industry and for government. Prior to 2001, the right to harvest was tied directly to the quota share, so fishers had to own or lease quota to harvest. The process of accounting for catches against quota was very complicated and imposed high transactions costs on both industry and government. Beginning in 2001, the permanent quota allocation was completely separated from the 'annual catch entitlement' (ACE). Completely distinct registries for quota (the permanent asset) and ACE (the annual right to land) made the entire process transparent (cf. Townsend *et al*. 2006). Leases and sale/buyback contracts were no longer necessary to transfer ACE for a fishing season. Compliance with the catch balancing regime shifted from a criminal compliance model to a system of civil fees, called 'deemed values' (Peacey 2002). Deemed values are fees per kilogram for failing to acquire ACE. The use of deemed values allowed devolution of responsibility for managing overcatches, because FishServe could collect civil fees, whereas criminal enforcement could not be privatised.

So the transition to FishServe reduced the direct costs of operating the fisheries management system and also dramatically reduced the overall transactions costs for industry. Had FishServe not reduced the transactions costs of the entire management system, these potential gains might have provided motivation for individual sectors to seek greater self-governance. In this sense, FishServe reduced the incentives for individual sectors to seek greater self-governance.

Challenger Scallop Enhancement Company ('Challenger') is the second example of well-developed fisheries self-governance. Since 1994, Challenger has undertaken comprehensive self-management (Arbuckle and Drummond 2000; Mincher 2008). Challenger seeds juvenile scallops, closes newly seeded areas to allow growth, conducts stock assessments and research, sets an annual quota within a nominal maximum quota established by the Ministry, and monitors biotoxins and seafood safety. Challenger has negotiated agreements with recreational harvesters and with oyster dredge vessels to

manage conflicts over use. A significant self-imposed fee on landings, which has ranged from 17 to 20 per cent, finances this management activity under the Commodities Levies Act (which is not part of the Fisheries Act).

The co-management institutions in the rock lobster (crayfish) industry and in offshore (deepwater) fisheries cover large, valuable fisheries. The New Zealand Rock Lobster Industry Council (NZRLIC) provides national representation for the industry. A major part of its activities is tendering for delivery of research services for its industry (Harte 2001; Yandle 2008). The NZRLIC is an umbrella organisation for nine regional Crayfish Management Advisory Committees (CRAMACs), one for each quota management area. CRAMACs represent local commercial interests in management arenas, and they vary widely in their level of engagement. A minority takes on active roles that have self-governance aspects, such as the CRA2 Rock Lobster Company's programme to shelve ACE to rebuild stocks (Yandle 2008). Overall, CRAMACs and the NZRLIC are very active participants in a co-managed governance structure, and they have an unusually active role in research.

The deepwater industry originally had separate commercial stakeholder organisations (CSOs) for three fisheries: the Hoki Management Company, the Squid Management Company, and the Orange Roughy Management Company (ORMC). These were consolidated into a single Deepwater Group in 2005. ORMC (and now the Deepwater Group) have run a self-managed programme of allocating fishing to subareas within quota management areas to prevent overfishing of substocks (Clement *et al.* 2008). ORMC and the Deepwater Group have had an especially active role in engaging the Ministry of Fisheries over orange roughy research and in delivering some orange roughy research independent of government (Harte 2001; Clement *et al.* 2008). Similarly, the Hoki Management Company and now Deepwater Group have managed an east-west suballocation of the hoki quota. In an illustration of the difficulties of enforcing voluntary agreements, in 2007–2008 and again in 2008–2009, the members of the Deepwater Group failed to meet their commitment to limit harvests to 25 000 tonnes in the western area. Marine Stewardship Certification (MSC) has been a major initiative of the Hoki Management Company. As with rock lobster, the activities in the deepwater sector would be more fairly labelled as co-management with narrow instances of independent action than as devolved self-governance.

There are several stakeholder groups for specific shellfish resources that have taken on very active management roles, including functions with aspects of self-governance. The Bluff Oyster Management Company has self-managed a programme of voluntary reductions in harvests (called 'shelving ACE') when stock conditions were depressed by disease (Yang *et al.* 2010). Crabco unitised all the holdings of quota for three deepwater crab species that entered the QMS in 2004 to develop that fishery (Soboil and Craig 2008). Recent reports indicate that development activities have

ceased. A similar organisation, Surfco, was created by holders of surf clam quota for six species that entered the QMS in 2006. The New Zealand Geoduc Company is doing the same for geoduck (deepwater clam), which entered the QMS in 2006. Notably, Te Ohu Kaimoana, the trustee for Maori assets distributed under the Treaty of Waitangi fisheries settlement, has taken the leadership role in the New Zealand Geoduc Company. Aotearoa Fisheries Limited, the commercial manager of most of those Maori assets, has taken the lead role in Crabco and Surfco. The Coromandel Scallop Fishermen's Association (CSFA) has been an active participant in the management of Coromandel scallops, and in 2009 the CSFA proposed a management programme based upon quota owners' shelving of ACE (CSFA 2009). The Paua Industry Council and its five PauaMACs have taken an active role in paua (blackfoot abalone) reseeding and fine-scale management. These shellfish sectors have several common features. They have a small number of participants whose self-interests are well aligned and they recognise their joint self-interest. They have generally established effective relationships with the Ministry of Fisheries. They are very interested in non-TAC management tools, such as area closures/rotation and reseeding. Both the management and the industry–government relationships continue to evolve. If there are to be more Challenger-like self-governance programmes, they would likely emerge from this group.

The more recent evidence suggests that Hersoug (2002) made a quite accurate assessment of quota owner associations: They are interesting institutions with the potential to evolve into stronger self-governance organisations, but they have rarely achieved that potential. The scope of the activities of the four major CSOs, in rock lobsters, deepwater, Challenger scallops and FishServe, have really not changed since Hersoug (2002). There is a range of interesting activities in some of the shellfish CSOs, but none of these has evolved into a comprehensive programme similar to Challenger.

In about 2000, the Ministry began to consider whether a formal framework for self-governance should be established and what form that framework might take. Bess and Harte (2000) attribute this interest to an independent review of the fisheries legislation commissioned by government. But the Ministry itself seemed aware that the nascent self-governance trend was stalling. The Ministry presented its conceptualisation of self-governance in its draft 'Fisheries Plan Framework' (MFish 2002). While that document was never implemented into policy, it is important to the current analysis because it is the clearest articulation of what the Ministry expected of self-management. We argue below that self-governance under that conceptualisation would involve high transactions costs.

The draft framework envisioned replacing the existent *ad hoc* process of self-governance with a codified set of standards and expectations. While not reflected explicitly in the document, the Ministry seemed to understand that reducing the uncertainty of the process was an important step in reducing the costs of self-governance. The draft framework envisioned that industry would

caucus and devise a comprehensive proposal for its self-governance activities. The Ministry would provide technical support and advice, but would not engage in negotiation at the plan development stage. Once a plan was developed, it would be submitted to the Minister of Fisheries for approval (MFish 2002, pp. 26–28).

The draft was ambiguous about what would be required of fishery plans or what standards government would apply to their evaluation. The draft indicated in some places that a plan might address only a few, narrowly defined, fisheries management issues, such as area closures (MFish 2002, p. 15). But the overall tone of the draft strongly implied that the Ministry was more interested in plans that negotiated all aspects of management with all other interested groups, including environmentalists, recreational users, and Maori customary users (MFish 2002, pp. 9–10).

The 2002 draft fisheries plan framework was overtaken by a wider debate over whether self-governance was appropriate at all. The result of that debate was a change in policy direction, with Ministry-led fish plans as the core of the new policy direction instead of industry-led fish plans. Consequently, the question of why self-governance has been so limited is largely irrelevant to current New Zealand fisheries management (although the issues could take prominence again in the future). But this experience does provide important insights into how effective self-governance might be structured elsewhere.

4. The costs and benefits of self-governance in New Zealand

Economists familiar with the often-perverse record of government regulation might expect that any industry would jump at the opportunity to accept any management authority that government offered to delegate. But careful examination suggests that the benefits of self-governance in New Zealand may have been limited and the transactions costs of organising self-governance high under existent rules and expectations.

4.1 Limited benefits

Because government had already addressed some of the inefficiencies of government regulation, the benefits that might accrue to greater industry self-governance were lower in New Zealand than in countries with more burdensome regulatory costs. Administrative functions were in the process of devolution to FishServe, so individual fisheries did not need to address these issues. Cost recovery had resulted in a transparent accounting for the costs of the Ministry, which made it easier for industry to lobby against inefficiencies. Government research functions had been turned over to a separate Crown Research Institute, the National Institute of Water and Atmospheric Research (NIWA), in 1996. NIWA was required to compete for research contracts after this separation. The combination of transparent accounting and contestable research provided the industry significant input into the research

planning process (Harte 2001). The limited adoption of self-governance may have reflected a calculation that the remaining benefits to be achieved were modest.

4.2 High internal transactions costs of decision-making

The transactions costs of implementing self-governance must be less than the benefits derived to warrant industry action. To self-govern, QMS rights holders must incur substantial transactions costs to self-organise and then to bargain with government. The idea that transactions costs limit self-organisation can be traced to Coase (1960). Specifically for fisheries, Cheung (1970) argued that the absence of property rights raises the transactions costs of negotiating contracts for the efficient use of resources.

The draft fisheries plan framework was largely silent about decision-making within the industry. At one point (MFish 2002, p. 26), the draft framework did suggest 'democratic principles for making decisions'. But lacking any details, the pre-existing requirement that the industry agree unanimously was implicitly continued. Unanimous agreement creates large obstacles for joint decision-making even in small groups. Being a holdout in such negotiations is often a dominant strategy. In large groups, unanimity is simply impossible to achieve. The draft framework seemed completely unaware of the very high transactions costs of unanimous consent.

If an agreement is reached, it must be enforced. A group of QMS rights holders could sign a civil agreement that specifies how violations of the agreement would be addressed. The draft framework (MFish 2002, p. 27) expected the industry to arrange for all participants to voluntarily sign contracts with binding self-enforcement penalties. But even if the participants would voluntarily agree to contractual penalties, such contractual penalties face serious limitations. The legal framework in New Zealand precludes the exercise of police powers by private entities. Private enforcement provisions cannot be punitive; penalties must bear some relation to the costs incurred by failure to obey the terms of a contract. In the fisheries self-governance context, this is problematic because non-compliance may be difficult to detect and because the costs of non-compliance can be very difficult to quantify.

The success of Challenger seems to have created unrealistic expectations about the prospects for internal industry negotiations over self-governance. The draft framework, not unexpectedly, refers to the Challenger experience in several places. But the draft fails to recognise two unique circumstances in the Challenger scallop fishery. First, the potential benefits of self-governance were large and relatively obvious. The industry was closed as a consequence of previous over-fishing. The technology for seeding scallops to spur recovery and hence to realise very large economic returns was available, but government had insisted that industry fund its own programme. Second, the key issue was funding for reseeding, rather than regulatory action. Challenger was able to make a non-unanimous decision on funding under the

Commodities Levies Act and thereby manage free-riding (and the associated high transactions costs). While Challenger has also signed contracts with all quota owners and harvesters, this unanimous agreement was achieved in the context of the majority voting rules of the Commodities Levies Act. And even if Challenger were classified as achieving unanimous agreement under voluntary rules, its thirty-five members would be among the largest memberships in the world to operate self-governance under unanimous consent rules (Townsend and Shotton 2008). However striking the achievements of Challenger may be, the special circumstances behind its emergence needed to be appreciated.

4.3 Uncertainty over bounds of self-governance

Dealing with government involves large transactions costs. Government is a relatively unpredictable partner in negotiations, and this unpredictability contributes to transactions costs. The process of trying to codify a framework would itself suggest that government did want to reduce that uncertainty. But to create a more predictable framework, government must be prepared to set limits on its own future decisions. Governments are typically reluctant to yield their power, and the draft fish plan framework was not an exception.

Rather than codifying how government would utilise its powers, the draft framework seemed only to codify that government would continue to exercise the full scope of authority available under the Fisheries Act. The industry-led fisheries plans were to be advisory to the formal government regulatory process. The draft sent ambiguous signals about how firmly the government would be bound by fisheries plans that were accepted. For example, the draft indicated that future decisions by the Minister 'must take account' of fisheries plans (MFish 2002, p. 10). The draft also states, 'It is expected that the Minister would not unilaterally amend a plan. To do so would amount to disenfranchising the proponents from ''owning'' the plan' (MFish 2002, p. 37). But the draft expected that the Minister would retain the sole authority to evaluate a plan and to terminate the plan if the Minister were unhappy with implementation (MFish 2002, p. 18). While recognising the disincentives inherent in unilateral decisions by the Minister, the framework nonetheless reserved the right for unilateral action.

Arguably, the 2002 draft fisheries plan framework would have ceded less authority to industry than was available under the previous *ad hoc* implementation of self-governance. Previously, the Ministry had signed a binding contract with FishServe (New Zealand and Commercial Fisheries Services Limited 2001) and a Memorandum of Understanding with Challenger (New Zealand Ministry of Fisheries and the Challenger Scallop Enhancement Company Limited 1997). In contrast, the new fisheries plans were advisory, rather than contractual.

The draft probably intended to communicate that the Minister would not act capriciously and that the industry could rely on past practice on that

point. The government has used a 'confidence-building' approach to self-governance contracts with entities such as FishServe and Challenger. Initial contracts were limited in scope with rigorous performance standards. As the government gained confidence in the ability of industry to implement specific management measures, greater flexibility has been accorded. The draft suggested in several places that the initial fisheries plans might be limited in scope and then evolve over time into more comprehensive systems (MFish 2002, pp. 20, 39, 64).

In defining how the Minister would be bound by an approved fisheries plan, the draft framework confronted the fundamental question about how self-governance relates to the property rights of the QMS rights owners. If self-governance were part of a strategy to extend those rights, then the rights would logically be accorded protection from arbitrary government action analogous to the protections enjoyed by other rights. The draft framework, in emphasising the primacy of government regulatory authority, was clearly a regulatory response rather than a property rights response.

4.4 Confusion over the fishery externalities and environmental externalities

The draft framework seemed to be built upon fundamentally unrealistic expectations for the scope of self-governance. The draft framework did not appreciate that quota owners had the correct incentives to solve the pool fisheries externalities but they did not have the correct incentives with regard to downstream externalities. The draft framework failed to understand the underlying incentive issues.

Steps by industry that might increase the landed value of the resource or that would reduce management costs were largely ignored (MFish 2002, pp. 23, 43). The draft framework seemed to assume that such opportunities did not exist because the QMS has resolved the most important fisheries management issues: 'By world standards New Zealand's fisheries are well-managed. The Quota Management System and the environmental standards set by the Fisheries Act mean that it is possible to ensure that valuable and vulnerable species can be harvested at sustainable levels' (MFish 2002, p. 9). In contrast, the draft framework emphasised the importance of negotiating with other stakeholders in plan development and resolving conflicts between industry and those stakeholders (MFish 2002, pp. 9–11, 26). The framework anticipated that the most important issue for fisheries plans would be the resolution of environmental conflicts. Maori issues are also identified for possible resolution under fisheries plans.

This broad expectation that industry would negotiate with third parties for resolution of downstream externalities would have created insurmountable transactions costs in most fisheries. At a basic level, with whom should industry bargain in respect to these downstream externalities? What group, other than government, can claim the right to represent society

broadly on issues such as at-risk species interactions?[1] But even if some interest group were designated to represent the collective interest, that interest group would have no incentive to minimise the transactions costs of negotiations. Rather, such interest groups are likely to withhold their agreement to push the entire fisheries management process back into the traditional regulatory environment.

That is not to deny that self-governance under fisheries plans can improve the management of some environmental interactions. Where failure to act risks higher-cost regulatory or legislative response by government, an industry does have some incentives to address third-party externalities through self-governance. But the incentive is almost certainly not efficient: the incentive is to reduce the probability of alternative government action, not to solve the externality.

5. Four obstacles to self-governance

The above analysis points in obvious policy directions for a government that wants to promote greater industry self-governance in fisheries. To expand the opportunities for self-management, four sources of transactions costs must be addressed: non-unanimous decision-making; private enforcement; clear and appropriate scope for self-governance; and well-specified accountability regimes.

5.1 Non-unanimous decision-making

Non-unanimous decision rules are crucial to collective decision-making. ITQ rights holders are joint owners of a set of resource rights. The benefits derived from the resource are, by definition, in proportion to the ITQ shares held. Joint ownership of economic assets is not unusual; most productive assets in modern economies are jointly owned by a large number of shareholders. Governance structures that require unanimous agreement to manage jointly owned economic resources are clearly not the norm; one-share, one-vote rules under corporate governance are the norm. Given the striking correspondence between shared ITQ rights and shared stockholder rights, the obvious collective decision-making rule for ITQ fisheries would be one-share/one-vote rules in proportion to the QMS share (cf. Townsend *et al.* 2006).

Even if one-share/one-vote majority rules were politically infeasible, other voting rules would still improve significantly upon unanimous agreement. Two examples are super-majority rules (e.g. two-thirds approval) or majority voting with requirements for majority approval by specified subgroups, such

[1] While the Ministry seemed reluctant to be drawn into the difficult question of how commercial users should self-organise, the Ministry seemed more willing to be drawn into the equally difficult question of how other stakeholders would be represented in this process (MFish 2002, p. 32): 'MFish will endeavour to provide information on which stakeholders the proponents should contact'.

as quota owners in different subareas. Any non-unanimous rule will substantially reduce the pay-off to the holdout strategy that dominates under unanimous agreement. Note, however, that majority voting among shareholders (i.e. democratic one-person/one-vote rules) would create undesirable incentives for QMS rights holders to divide their quota shares among multiple nominal owners, such as family members or employees.

As noted above, New Zealand quota owners can use the Commodities Levies Act to reach non-unanimous decisions about funding. Where funding is the key issue, as with Challenger's seeding programme, this may be sufficient to enable self-governance. However, the key issue confronting most self-governance organisations will be collective rules to manage fishing activity.

An alternative to enabling cooperation might be to raise the cost of non-cooperation. The Canadian government, in particular, has taken this path and has provided industry groups with two tools to encourage cooperation (Blewett 2002, Appendix D). First, the government has required that contracts for enforcement and monitoring be obtained through designated industry groups. For example, in the geoduck fishery, divers must obtain mandatory logbooks from the industry association (James 2008). In the sablefish industry, individuals must sign monitoring agreements with the industry association. Second, the government has 'use of fish' provisions that allocate some amount of the annual harvest to the industry association to fund activities such as research. In the halibut industry, ten per cent of the quota was allocated to the industry association, which the association can reallocate back to the individual quota holders. Essentially, this creates a situation where 10 per cent of each quota owner's ITQ is withheld until dues and fees are paid. The sablefish association also received a quota allocation that generates income for the association to cover the cost of research charters (Sporer 2008). There are 55 licences for geoduck; 48 for sablefish; and 435 for halibut (Jones 2003). These are notably larger than groups elsewhere that are organised under unanimous agreement rules. The Canadian experience indicates that rather modest steps by government made a large difference in the ability of industries to overcome free-rider obstacles.[2]

5.2 Enforcement

The Ministry conceptualisation of self-governance was that government would not be involved in internal industry governance and that included enforcement. Quota owners were expected to sign contracts with civil enforcement mechanisms. If fishers needed to be bound to agreements, the assumption was that quota owners would require any fishers who used their

[2] Note that the ability of the Canadian government to authorise 'use of fish' agreements has been ended by the Larocque decision (*Jean-Victor Larocque v. Minister of Fisheries and Oceans*, 2006 FCA 237)

quota to also sign. There are several problems with the assumption that civil contracts would be adequate.

The idea that quota owners could force all harvesters to sign was particularly problematic. The separation of ACE from quota in 2001 brought in the right to fish without ACE and then later in the fishing year to acquire ACE or to pay deemed values. Because any licensed harvester could, in principle, fish for any stock, there was no way that quota holders could bind all potential fishers.

There is a second, more fundamental issue with reliance on civil contracts for enforcement. The remedies available under civil contracts are limited in New Zealand, as they are in other countries with legal systems derivative of Great Britain. The remedy for failure to abide by the terms of a civil contract is to force the offending party either to abide by the contract ('specific performance') or to pay the offended party enough to compensate for the resultant damages. Civil contracts can specify 'liquidated damages' that the parties agree are appropriate for contract breaches, but these damages must bear some relation to the actual costs incurred. If a civil contract imposes what is clearly a penalty well beyond the damages incurred, then that part of the civil contract will be unenforceable. The imposition of penalties is a police power reserved to the state; civil contracts cannot create private police powers.

These limits on civil damages are a serious problem for self-governance in fisheries, for two reasons. First, if the violation is unlikely to be detected, then the expected value of the civil penalty will be less than the damages imposed. Second, for some types of violations, damages are very difficult to estimate.

If some action causes $100 000 of damages under the contract, but has only a 10 per cent probability of being detected, then the expected penalty from the action is only $10 000. The issue in fishing is clear. Unless there is 100 per cent independent observer coverage, each party to the contract will have incentives and opportunities to violate the agreement. One can find examples of successful private fisheries self-governance contracts where 100 per cent observer coverage is mandated, such as the US Pacific whiting (Sylvia *et al.* 2008), the Alaska pollock fisheries (Wilen and Richardson 2008), and the Alaskan weathervane scallop fishery (Brawn and Scheirer 2008). For those New Zealand deepwater, large-vessel fleets that are moving towards 100 per cent observer coverage, there may perhaps be scope for civil enforcement. But for inshore fisheries where the large numbers of small boats make 100 per cent observer coverage technically difficult and economically impossible, civil enforcement faces insurmountable hurdles.

The requirement that civil penalties must be related to damages presents a further problem. Consider a fleet that agrees to use a larger mesh size to reduce bycatches of juveniles. What is the damage caused if a vessel fails to follow this rule? There is no immediate damage. The damage occurs in the future, when stock sizes might be larger. But the process by which decreased juvenile mortality results in larger catches in the future is highly uncertain and therefore difficult to quantify.

Or consider a fleet that agrees via self-governance to use some gear to reduce incidental seabird mortality. The benefit to the industry is that effective voluntary action avoids more onerous government regulation. Consider the situation if one signer fails to use the gear and, as a consequence, government imposes those voluntary rules in regulation. What damage can the other members cite, as they are simply required to use a gear that they are already using? There is perhaps some loss of credibility with government and the public, but this is not readily amenable to commercial calculation.

Rules to enable private enforcement face fundamental obstacles in the limits on the delegation of police powers. Establishing effective self-governance around these obstacles will require pragmatic solutions that are probably specific to legal systems and to fisheries context. A mixture of two elements seems required. First, greater legislative specificity might increase the sphere within which voluntary enforcement is permissible and effective. Second, government could, at the request of a self-governance institution, enact parallel regulations to buttress negotiated self-governance.

5.3 Defining the scope of self-governance

By clearly defining the scope for self-governance, government can substantially reduce industry transactions costs. Uncertainty is a major contributor to transactions costs, and clarifying the rules reduces that uncertainty. As the uncertainty increases about what activities can be devolved, the costs of bargaining increase because the negotiations must cover more contingencies. Increased uncertainty also reduces the expected gains from private negotiations. The increase in transactions costs and reductions in expected benefits will decrease the industry's willingness to undertake private bargaining.

The New Zealand draft fisheries plan (MFish 2002) failed to consider the relationship between economic incentives and the appropriate scope of self-governance. The result was a draft plan that emphasised governance of downstream environmental externalities. The more appropriate focus of self-governance is on better management of fisheries externalities. Those activities might be divided into four categories: setting the TAC; managing residual fisheries externalities that are not solved by ITQs; stock enhancement; and support functions such as administration, research, and compliance.

Arnason (2007) showed that quota owners, both individually and jointly, do have incentives to set an economically efficient TAC under plausible assumptions. However, Arnason (2007) assumes that the only use of the stock is for commercial fishing under the ITQ. If the use of the resource is shared with non-commercial users, then quota ownership does not internalise all the relevant considerations. And even if the ITQ owners wanted to resolve the conflicting interests with non-commercial users, there arises the question of who represents those users. Metzner *et al.* (2003, pp. 185–186) argue that the poorly defined rights and responsibilities of recreational fishers, in particular, is itself a major obstacle to all types of co-management in New Zealand's

inshore fisheries. And if society has placed an existence value on a species, then the possible incentive to mine slow-growing stocks (Clark and Munro 1978) must be considered.

Devolving the right to set TACs to ITQ owners therefore faces challenges. However, one could imagine delegating to ITQ holders the authority to collectively decide to catch less than some government-imposed TAC. In New Zealand, this is accomplished by 'shelving' ACE, which has been implemented by CSOs in Challenger scallops, Bluff oysters, and some rock lobster areas. Industry might have several reasons to shelve ACE. The industry might want a faster rebuild of stocks that are below maximum sustainable yield (MSY) than government prescribes. The industry might want to allow stocks to rebuild above MSY to lower harvest costs or to increase the average size of fish. The industry might disagree with the government's estimate of MSY. Particularly in fisheries where stocks and therefore harvests fluctuate widely, there are administrative advantages to allowing industry to use ACE shelving to adjust the TAC. The time required of government to implement regulatory adjustments of TAC may mean that TAC adjustments within a fishing year are cumbersome or even impossible. An industry that can credibly implement ACE shelving may be able to implement in-season TAC adjustments that are difficult for government to achieve.

The most obvious area for self-governance is the management of fisheries externalities that are not resolved by ITQs. While ITQs define a set of users and allocate their rights to catch fish, the ITQ owners are still joint users of a common pool resource. How each fisher conducts fishing has a range of impacts on the stock. Fishing on spawning stocks or nursery grounds may reduce reproduction. Capture and discard of juvenile fish (even if reported against quota) may reduce future yields. Managing these residual externalities is often a 'fine-scale' exercise, where government faces limited information and difficult compliance issues. Therefore, these issues are especially attractive for self-governance.

To manage these residual pool externalities, quota owners would require collective authority to regulate when, where, and how fishing takes place. These residual externalities are generated by the activity of fishing, so managing them requires managing the fishers who use ACE. This regulation could perhaps be implemented as conditions in a uniform industry-wide contract for any use of ACE. In New Zealand, however, the ability to fish against deemed values (and therefore without ACE) makes this control incomplete. One option would be to allow quota owners to implement minimum ACE-before-fishing rules, as is currently done by regulation for rock lobster and paua.

Particularly for shellfish resources, opportunities may exist for industry to enhance wild stocks through activities such as reseeding or area rotation. That was the initial motivation for the creation of Challenger. In these circumstances, self-governance is akin to ocean ranching. The worldwide experience with self-governance suggests that self-governance has been

especially significant in species such as scallops, where these stock enhancement opportunities are most obvious (Townsend and Shotton 2008).

Finally, self-governance can assume administrative functions and implement research. FishServe has demonstrated that privatising administration may have wider advantages than simply lowering direct administrative costs. It may also lower costs for industry. In New Zealand, some research is delivered independently by CSOs. However, this private delivery must provide quality assurance to address concerns by other stakeholders that commercial interests might manipulate research to serve their self-interest. Self-governance might also implement some aspects of compliance, such as observer coverage. Private compliance functions are, however, limited by the inability to use police enforcement powers.

5.4 Defining oversight institutions

The debate over self-governance often proceeds as if the end result will be the transfer of complete authority over some range of decisions from government to the self-governance institution. The reality is that government will retain oversight authority. One of the most difficult practical issues for self-governance is how to structure that oversight.

Fishing causes third-party externalities through impacts on birds, marine mammals, and turtles and through effects such as trawl impacts on the benthos. Many fisheries have non-commercial, as well as commercial use. And government, as formulator of the rules structure for fisheries exploitation, will be held accountable if self-governance results in unacceptable stock deterioration.

Oversight institutions must balance two competing objectives. Under strong oversight, the self-governance institution risks being constantly second-guessed by government. In the limit, such oversight is indistinguishable from command-and-control regulation. If the region within which self-governance is allowed to operate is too narrow, there are few benefits to offset the transactions costs of organising. But a government that assumes only weak oversight probably cannot avoid bearing some of the costs of failure of self-governance. Those costs may be political – 'how could you let them do that' – and they may be in the form of reduced future benefits from the resource.

An obvious vehicle for oversight is a contract between government and industry. As discussed above, the relationships between FishServe and government is governed by a contract. A memorandum of understanding governs the relationship between Challenger Scallop Enhancement Company and government. A memorandum of understanding states the expectations of the two parties, but fails to specify what will happen if those expectations are not met.

As a practical matter, oversight of self-governance is likely to evolve through a process of confidence building. The initial scope for self-governance is likely to be narrow and tightly specified, with complicated oversight.

As an industry demonstrates success, and particularly if it can solve problems that have eluded government solution, the scope is likely to expand and the oversight may become less complicated. The difficulty with such a confidence-building approach is that the benefits of self-governance will be limited in the short run. Only if the industry has confidence that the process will be sustained to produce longer-run benefits can it justify investment in the process.

The New Zealand experience with FishServe provides useful experience on the process of devolving an activity and defining an oversight structure. The process was not quick; several years were required to define and implement devolution. The process of devolution required both industry and government to assess the existing government processes. Concurrent with devolution, New Zealand implemented legislative reform to separate ACE from quota and to implement civil deemed values. This administrative simplification was crucial because it allowed devolution of well-defined functions under transparent oversight. As part of devolution, MFish defined the services and service standards to a much more exacting degree than it had defined those services under its own administration. Again, this was necessary for transparent oversight. While establishing oversight was time-consuming, the process resulted in clearer and simpler administrative frameworks, with broad benefits.

6. Summary: the policy agenda to promote self-governance

The debate over self-governance, both in the academic literature and also in New Zealand, has proceeded as if the only role for government is to decide whether to allow industry to self-govern. That debate may (but does not always) recognise the subsidiary questions of what scope of self-governance is appropriate and how to structure oversight. But the question of how industry self-organises is typically treated as if it is entirely a matter for industry. This analysis emphasises that decision-making by the industry is a key area for government policy. Government policy created the property rights under the New Zealand QMS and implicitly created a set of joint owners of the resource. The next step in institutional design is to empower those joint owners to make joint decisions. Government policy can reduce the high transactions costs of unanimous decision-making and provide better tools for self-enforcement. If the policy goal is to promote self-governance of fisheries resources to improve economic performance, then addressing these transactions costs should be on the policy agenda.

While the policy agenda that is required to empower self-governance may be relatively clear, the steps required face significant political hurdles. Legislatures (and the agencies that advise them) may be very wary of granting quota owners the power to impose non-unanimous decisions and to enforce regulations on each other and also on users of their stocks. Self-governance challenges government to cede decision-making to private parties in a much more fundamental way than occurs under cap-and-trade regulation, including ITQs.

Hindsight leads us to conclude that New Zealand failed to identify and to address key issues in self-governance. But that same hindsight should note that New Zealand tackled these difficult issues without the benefit of economic analysis of self-governance to guide its decisions. New Zealand has not been content to rest on the laurels of its world-leading ITQ programme. New Zealand's continued search for more efficient institutions for fisheries governance should challenge economics to analyse how ITQ rights can be structured to allow a greater scope for efficient private management of fishery resources.

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