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Perspectives

Evergreen Leasing of Aquaculture Sites

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Abstract *Government policy on siting of aquaculture must balance the objective of providing a long planning horizon for the industry against a broader social interest of adapting lease terms to new environmental information. Evergreen leases are proposed to balance these objectives. Under an evergreen lease, the lease renewal occurs not at the end of the lease, but rather at mid-term. For example, a 20-year lease might be renewed at year five or year 10. The mid-term renewal process avoids end-point biases and also creates incentives for the two parties to successfully bargain a renewal. Evergreen leases are an appropriate institution when two parties want a long-term relationship but recognize that terms of the relationship must evolve to reflect new information.*

Key words Aquaculture, evergreen leases.

JEL Classification Code Q22.

Opportunities and Challenges in Aquaculture

Most opportunities to expand the world's fisheries output are in aquaculture. Better management of capture fisheries may expand wild production modestly, but such gains will not keep pace with growing world demand for fish. Government decisions will greatly shape the future development of aquaculture. Most notably, governments will determine how aquaculture will be given access to the marine environment.

Government decisions about the future of aquaculture will also have implications for wild capture fisheries. While aquaculture is often regarded as simply a competitive source of seafood products, aquaculture and capture fisheries are developing much more complicated interactions. As Anderson (2002) has argued, the distinctions between capture fisheries and aquaculture are becoming narrower. Aquaculture techniques are increasingly applied to capture fisheries to increase

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landings and value. In Australia, wild-caught bluefin tuna are fattened in pens before sale to sashimi markets. In Alaska, cooperatives have released hatchery-reared juvenile salmon to augment and stabilize runs for 25 years (Amend 1989). The seeding and rotation program implemented by the New Zealand Challenger Scallop Enhancement Company applies aquaculture technology (Arbuckle and Drummond 2000). The geoduck harvesters in western Canada, who harvest animals that are up to 100 years old, have embarked on a program of seeding their resource (Heizer 2000). As Anderson (2002) suggests, the evolution of stronger rights in wild fisheries provides greater opportunities for applying aquaculture technology to wild fisheries.

Aquaculture is also changing the markets for seafood. Aquaculture can control production to raise quality and to match the preferences of consumers. There are no punctures, abrasions, or bruises from capture on aquacultured product. Aquacultured product can be delivered to market with pre-determined quality attributes, including size, fat content, and color. Aquaculture can breed strains that meet characteristics required by specific markets. Aquacultured product is delivered to markets when it most valuable, not when it is easiest to catch. Aquaculture can develop short supply chains that maximize freshness and minimize distribution costs. These developments are changing the entire seafood market.

Aquaculture is a high-technology, high-risk industry. Technological progress analogous to that in agriculture over the past century and a half will occur in perhaps two to three decades. For example, in Norwegian salmon aquaculture, costs of production fell 64% between 1982 and 1995, which implies an annual rate of cost reduction of about 7% (Asche 1997). Selective breeding programs in salmon, catfish, trout, and tilapia have resulted in increases in growth rates of 10-25% per generation of selective breeding (Refstie, Rye, and Eknath 1999). Selective breeding is also used to achieve more efficient food conversion, disease resistance, and higher quality (Refstie, Rye, and Eknath 1999). The opportunities for application of genetic biotechnology are more limited by social and political issues than by science. Despite those obstacles, biotechnology has already seen significant commercial application in a few species, such as triploid Pacific oysters and monosex culture of salmonoids and tilapia (Dunham 2004). Competition in aquaculture is worldwide, and developing countries, such as Chile, are proving fierce competitors. Firms that enter aquaculture must be prepared to make significant investments not only in physical infrastructure but also in technology development and human capital of workers.

Government policy will significantly affect the environment in which these decisions are made. Aquaculture will expand most rapidly if governments provide a stable long-run environment. A central issue is the availability of space in oceans, bays, and estuaries. From the view of aquaculture, the ideal situation would be permanent rights to use specific areas. This would encourage aquaculture operators to make investments in water-based infrastructure (cages, rafts, and moorings), in shore-based support infrastructure (maintenance and processing facilities), and in the local people who run and manage the facilities.

While the opportunities for aquaculture are significant, there is also growing concern over environmental impacts. A major technical concern has been the impact of wastes and discharges from aquacultural facilities (Midlen and Redding 1998). Aquaculture may also negatively impact the overall productivity of the environment. For example, mangroves, which are rich sources of nutrients and serve as spawning and nursery grounds for many species, have been severely depleted for shrimp aquaculture. The Philippines, one of the most severely affected countries, has seen its mangroves decline from 450,000 hectares in 1981 to 140,000 hectares today (White and de Leon 2004). Aquaculture may negatively impact species of special

concern, such as those that are endangered or threatened. For example, Maine's salmon aquaculture industry faces very restrictive regulations to protect wild stocks from risks due to disease and interbreeding with escaped salmon (NMFS and USFWS 2004).

Particularly in developed countries, the conflicts over use of nearshore marine space are increasing. Much of the world's population lives on or near the coast, and people continue to migrate to the coast to enjoy its amenities. Aquaculture may compete for use of the marine environment with commercial and recreational fishers, recreational and commercial boaters, riparian landowners, and indigenous populations. Capture fisheries, including commercial, recreational, and customary users, worry that aquaculture will intrude on historic fishing grounds. Riparian landowners, and especially owners of coastal homes, dislike the visual impact of cages and rafts and the nearshore activities of aquaculture. Boat owners are worried that moorings and navigation channels may be lost. Hersoug (2002, pp.101-116), for example, identifies all these conflicting demands in New Zealand.

In light of these environmental concerns, many governments are unwilling to grant permanent rights for aquaculture sites. Leases rather than permanent rights will often be granted. The immediate issue is how these leases will be structured.

A Middle Ground: Evergreen Contracts

Leases can be constructed to provide stability for the leaseholder while still preserving options for lease modification by the government. This can be accomplished through "evergreen contracts." The difference between a simple lease contract and an evergreen lease contract is the mechanism for renewal. Under a simple lease, the government and lessee negotiate a new lease as the old lease expires. This creates significant uncertainty for the lessee, because little advance notice is provided for major changes in lease terms or perhaps even lease cancellation. Under an evergreen contract, the new lease is negotiated well before the old lease expires, while at least half the initial lease term remains. For example, if a lease were to run for 20 years, a new 20-year lease might be negotiated at year 10 or perhaps even as early as year five. These contracts are "evergreen" because, if the parties negotiate successfully, the contract will always have more than half the lease period to run. The evergreen contract provides greater continuity and predictability and avoids undesirable incentives to behave short sightedly as the contract nears expiration.

This simple change in renewal timing has a dramatic impact on the ability of the lessee (and also the government) to plan. If lease cancellation is to occur, the lessee has substantial advance notice. If the government wants to impose changes that involve substantial expense for the lessee, the lessee can plan for those changes and also has the option of letting the current lease run to expiration.

Both parties have strong interests in renegotiating the lease at the specified mid-term date. The lessee wants the security of a new 20-year lease to allow long-term business planning and is therefore willing to accept changes in current lease terms that may be inconvenient in the short run. The government wants a mid-term renewal because new operating requirements can be applied immediately, rather than waiting until the lease expires at year 20. Because both parties want renewal at mid-term, they have incentives to compromise and to acknowledge the legitimate interests of the other party. Evergreen contracts can often find common ground on issues that would be more difficult in either a regulatory context or a fixed-period lease. Both parties expect to maintain their relationship, so an evergreen contract encourages longer-term vision by both parties. Opportunistic behavior is counterproductive, because it undermines future renegotiations and hence the entire relationship.

An evergreen contract is well-suited to the needs of two parties who want a long-term relationship, but who also recognize that the relationship must evolve as new information emerges. Many governments want the economic benefits of aquaculture, but also want flexibility to deal with unforeseen developments. Both governments and aquaculture operators have an interest in the long-term relationship that evergreen leases can provide.

An evergreen lease should be distinguished from a system with a permanent lease, but subject to periodic respecification by the government. First, an evergreen contract gives the lessee some bargaining power through the option to continue the lease until its terminal date. This provides the lessee with some leverage in the bargaining at the mid-term renegotiation. But, second, the periodic renewal process itself creates predictability. The contract will run for a specified period without modification. Both parties know when renegotiation will occur and therefore can prepare scientific studies and other information to meet that schedule. By forcing periodic review of the lease, it is more likely to undergo gradual adjustments than if change waits until the government perceives a crisis. Traditional regulation often disregards minor short-term problems and then makes cataclysmic changes when the accumulated problems overrun the system. Evergreen leasing builds in a process for institutional preventative maintenance.

Forestry and Grazing Antecedents

Aquaculture leases are quite analogous to government leases of forestlands and grazing rights. Evergreen operating contracts are used for forestry leases in New Zealand and Canada, while evergreen grazing leases are used in Australia.

In 1989, New Zealand embarked on privatization of most of its forestry resources (Kirkland and Berg 1997; Foran 2001). Because of Maori objections to sale of land, privatization was structured as sales of trees and leases of land. The leases are permanent, unless Maori claims result in transfer of title from the Crown to Maori. Annual land lease fees are based upon market value, which is negotiated between the government and the lessee. An arbitration process is invoked if agreement is not reached. To manage the uncertainty created by Maori claims, New Zealand uses an evergreen contract of 35 years, which is automatically renewed every year. This “35 plus 1” contract provides a 35-year notice if Maori claims are upheld for any leased area. Once notice is given of Maori ownership, lease payments are made to Maori rather than the government. The lessee can either let the 35-year contract run to expiration, or can negotiate a new lease with Maori.

In Canada, the responsibility for managing Crown forestry land resides with the provinces. Ontario leases forestry land under Sustainable Forestry Leases. These leases have durations of 20 years. A third party review is conducted every five years. A successful review results in a new 20-year lease. New Brunswick also uses evergreen contracts for leases of Crown forestry lands. These leases also run for 20 years, with renewal at year five.

One state in Australia leases grazing lands under evergreen leases, one state uses a process akin to evergreen leasing, and a third has proposed adopting an evergreen lease. South Australia uses an evergreen structure for grazing leases, with a lease term of 42 years that can be renewed for another 42 years in year 14 (Productivity Commission 2002). Western Australia has all leases expire in the same year. About 15 years prior to that expiration, a Crown review is conducted to determine the new terms for all leases (Young 1987). A process for third-party certification has recently been proposed for grazing leases in Queensland (Mac Dermott 2003). Under this proposal, existing 30-year leases could be extended for 10 years if an

approved third-party agency certifies that the lessee has met conservation conditions for two consecutive five-year periods. This structure would reduce new leases by five years for any non-compliant period. For example, if a lessee is not certified in the first five years but meets the standards in the subsequent two five-year periods, the lease would be extended for 10 years at the end of year 15. This effectively reduces the renewed contract from 30 to 25 years. This penalty in lease length would create a strong incentive to remain certified.

Structuring an Evergreen Contract

The terms that might be incorporated into an evergreen lease are limited only by the ingenuity of the government and the lessees. Some possibilities are discussed here.

Lease Coverage

An evergreen lease would cover everything that would be included in a fixed-term lease. A lease would probably address most of the following issues:

- Specification of area subject to lease and authorized activities therein.
- Specification of lease rental payments.
- Requirements to limit interference with navigation.
- Restrictions to reduce interactions with capture fisheries or other leases. The lessee would probably negotiate reciprocal protection for its activities.
- Limits on activities to protect specific habitats or species. An example might be interactions with marine mammals.
- Disease monitoring and seafood safety protocols.
- Research activities on unresolved environmental concerns.
- Performance bonds and penalties for violating lease terms.
- Reporting and auditing requirements.

A well-designed lease will comprehensively address all the issues the two parties can foresee, but good contracts also anticipate the unexpected. Language that broadly specifies management of many contingencies can and should be included in leases. For example, the emergence of new, previously unknown diseases is a strong possibility. Leases could specify that all disease outbreaks must be reported and that best industry practice will be used to manage any outbreak. The lease could specify that an independent third-party panel will be convened upon outbreak and that their recommendations for disease management will be mandatory for all lessees. Another predictable unexpected event would be new interactions with an endangered or protected species. Again, requirements to report, to use best practice, and to abide by an independent panel could all be used. Contingencies could also be specified if there are pending or potential indigenous claims that must be accommodated.

Length and Renewal Terms

The lease would specify the renewal timetable, including dates for each side to submit proposals and penalties for failure to submit proposals within the timetable. The length of a lease can vary, but the goal is to avoid continuous negotiation. The evergreen contracts in grazing and forestry typically use relatively long contracts (20–40

years) with renewal at relatively short intervals, typically 5–10 years. These terms suggest that the two parties have confidence in their long-term relationship, but recognize the need for periodic fine tuning. Graziers and foresters have had long relationships with governments, and this history generates comfort on both sides. As aquaculture is less established than forestry and grazing activities, shorter leases may be appropriate. Something like a 10- to 20-year contract, with renegotiation at year 5 to 7, seems plausible. As the government and the industry gain experience and confidence in the evergreen renewal process, it will probably be mutually advantageous to lengthen contracts. Longer contracts reduce the costs of conducting negotiations and create more predictability.

A third-party certification process for automatic renewal, as in the Queensland proposal for grazing leases and in the Ontario forestry leases, is quite interesting. This process ties renewal directly to environmental performance. The renewal structure in the Queensland proposal would permanently penalize any lessee who failed to retain certification by reducing the length of the contract. Other incentive structures are also possible. Using a third-party certifying process, of course, requires an approval process for the certifying agencies.

Contracts for leases can be staggered so that the lease renegotiations occur sequentially, rather than all at once. This allows government personnel to be used sequentially. This staggering also increases predictability, because the industry is aware of changing government policy in new leases. If, for example, the government insists on stronger terms to manage visual impacts in leases being renewed this year, firms facing future renewals can anticipate those changes in their leases.

Arbitration

Some provisions might be subject to third-party arbitration. Arbitration can mange unanticipated developments more quickly and at less cost than court proceedings. The arbitrator could be specified in the contract or could be on a permanent independent board.

Arbitration is a well-established procedure in grazing and forestry leases (including non-evergreen leases) to set the valuations that determine annual lease fees. New South Wales and Queensland in Australia and New Zealand all have boards to arbitrate disputes over valuations.

Nested Contract Structures

There may be aspects of leases that are common to all leases for a particular type of fish or shellfish. These might include specifications of best practice for disease management and monitoring of environmental impacts. To reduce the costs of negotiation, these common terms could be negotiated in an industry-wide evergreen contract. Involving the entire industry will improve the lease specifications and reduce negotiation costs. Industry-wide specifications can also be used for inter-lease comparisons on performance terms that may be difficult to specify in advance. For example, leases might include “best-practice” requirements that would be given specific interpretation in a detailed industry-wide contract or by referral to general industry practice.

Force Majeure Provisions

Governments accustomed to unilateral regulatory powers are uncomfortable (perhaps understandably) when a long-term lease might compromise that power. This concern is often stated as, "What if some unforeseen catastrophe happens? The government must have the authority to act." Governments may insist upon the unilateral option to invalidate the contract.

Three distinct circumstances need to be identified. First, some events truly fall well outside the range of events that the parties could reasonably have expected. These circumstances are routinely covered in contracts by *force majeure* clauses. The legal system has established standards by which "acts of God" and other completely unforeseeable events can invalidate contracts. Any lease will almost certainly include *force majeure* provisions. These provisions do not create unnecessary uncertainty because the legal precedents are clear. For example, *force majeure* provisions would cover an unforeseen court case that resulted in substantial changes to the authority of the agency to grant leases.

However, there is a second set of events that surprise government only because it tends to substitute regulatory intervention for planning. These are the developments that, while specifically unpredictable, fall well within the range of events for which advance contingencies are easily specified. For example, the possible terms for new diseases, endangered species interactions, and indigenous claims were discussed above. For some events, the appropriate contingency might be expiration of the lease with specified payments for early cancellation. Expecting the government to specify the management of foreseeable contingencies provides incentives for the government to plan effectively. If government can excuse itself from its failure to plan, it will have no incentive to plan.

Finally, there are the completely foreseeable events about which the government wishes to change its mind. The purpose of any contract is to protect each party from such capricious changes. It is this temptation to abuse or invent "emergencies" that contracts are designed to avoid.

Summary

Evergreen leases offer a useful compromise between permanent aquaculture rights and fixed-term leases. The mid-term renewal process provides greater predictability than a fixed-term lease but also allows lease terms to evolve with new information. For governments, the challenge is to provide a foundation for aquaculture that balances the industry need for stable institutions with broader social demands to accommodate new environmental information. Evergreen leases provide an institutional framework within which to balance these competing objectives.

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