



HÁSKÓLI ÍSLANDS

Birgir Þór Runólfsson

Measuring Quality of Property Rights

NOS-H Workshop:

**“Advantages and Disadvantages of Strong User
Rights in Fisheries”**

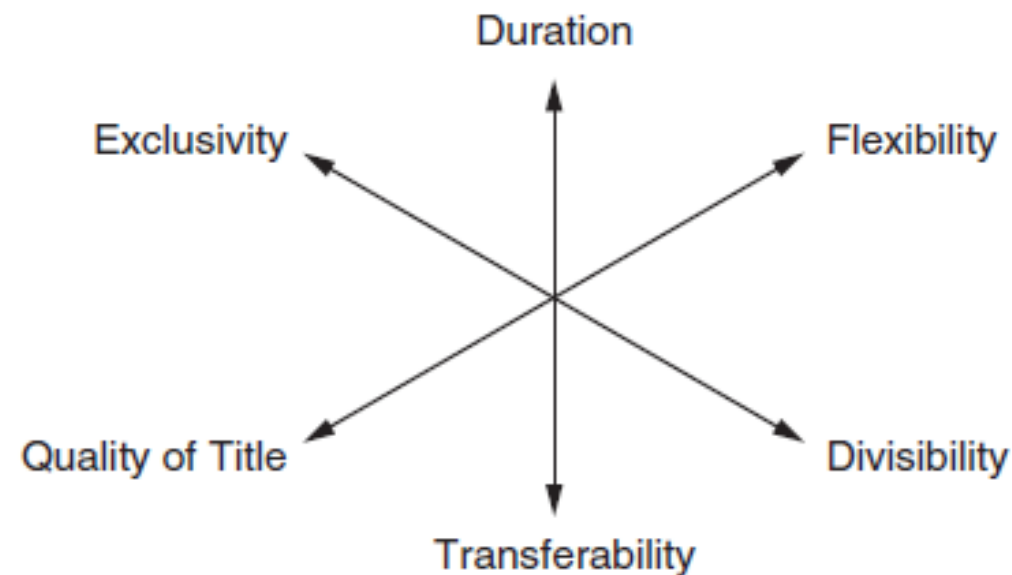
Copenhagen, 5th and 6th November, 2021.

Bundle of rights

- Economic exchange usually depicted as physical exchange of goods.
- Property rights theory, which Alchian and Demsetz are probably the most known representatives.
- That paradigm depicts economic exchange as exchange of property rights and states that the value of a good depends on the specific design of the relevant property rights.
- Four components are often identified:
 1. The right to use a good (usus).
 2. The right to modify a good (abusus).
 3. The right to enjoy the fruits from the use of a good (usus fructus).
 4. The right to transfer property rights of a good to other persons (venditio).
- These are often referred to as a “bundle” of rights.
- Although they do capture important aspects of “property rights”, which may be useful for simple analysis, a more detailed description of the characteristics of “property” is needed and one that is also measurable/quantifiable.

Scott's six pointed figure

- Figure 1 shows Scott's (2008) six characteristics graphically.
- The arrows represent the dimension of the property right, and do not imply interactions between the characteristics.
- Scott (2008b) states: „Economist will understand that the measured dimensions are not necessarily independent“.



Exclusivity

Physical interference with use of resource by other users

Interference with use as a form of sharing of resource

No interference, full exclusivity

Some/much interference, lower level of exclusivity

Independence or freedom from government regulations

Regulations restrict use of resource

Restriction on ways to use to promote public good

Restriction on use to promote gov't own ends

If resource has multiple uses this complicates matters

Interfering *uses*

Interfering *users*

Does holder have right to all uses, internalizing all

Does holder only have one use of many uses

Duration

The period of time within which the holder may carry on his resource use

The period of time a second user must wait for the first user to finish his use

- These may be
 - indeterminate/permanent, or
 - limited to months/years

Flexibility

Powers and obligations a right bestows on the holder can be adjusted without weakening title

Holder has choices with respect to his three powers of ownership

- Management
- Disposal
- Receipt of income/enjoyment

No flexibility means one standard or agreed kind of use, sale and mode of payment

Quality of title

The extent to which a right is proof (secure) against others' claims

Good quality of title allows holder to be sure he will receive payoff of improvements/increased value

Historically, quality of title has depended on three conditions:

Legitimacy

Enforceability

Freedom and security from government seizure

Transferability (alienability)

The standard of property right's transferability determines the extent to which a holder may bequeath, trade or sell his interest in a resource.

Often described as the indispensable aspect of ownership rights

In the real world the right of complete transferability is rare

Divisibility

Not same as transferability in parts, more complicated

- Horizontal divisibility
 - Subdividing resource into numerous smaller pieces, whether for lease, gift, will, or sale.
- Creation of co-ownership, whether of share type or “common ownership” (joint owner vanishes on death)
- Vertical divisibility
 - Refers to overlapping temporal claims, where each right exists today
- Multiple-use divisibility
 - To create a separate right to each of the uses

Measurable and quantifiable

- Scott is not interested in deriving solutions to an optimal property holding problem.
- Arnason (2000, 2008) explains the relationship between these characteristics (in sum referred to as “quality” of) property rights and economic efficiency, in the sense that more of the characteristics lead to better functioning regimes of property rights.
- Scott and Arnason assume that the characteristics are quantitative and treat them as though they are continuous, measurable and changeable (rather than dichotomous, amorphous and fixed).
- Scott (2008, 13): „[I] do not share the Victorian notion that society’s laws and institutions, like nature’s mechanisms, are not only perfectible but are constantly in the process of perfecting themselves and, in so doing, are bringing to the service of humankind (and of God) more specialization, more economies of scale, and more diversity. At least, such a belief does not fit the historical evidence on the development of property rights.... This is not my concern. I seek to learn how and why the characteristics of property rights have changed, not—at least as a general principle—whether the changes were a good or a bad thing.“
- Arnason (2008, 33) states: „[T]he higher the quality of a property right, the more efficient is the associated economic activity“.

Q-measure of property rights quality

$$Q \equiv S^\alpha \cdot E^\beta \cdot D^\gamma \cdot (w_1 \cdot + w_2 \cdot T^\delta)$$

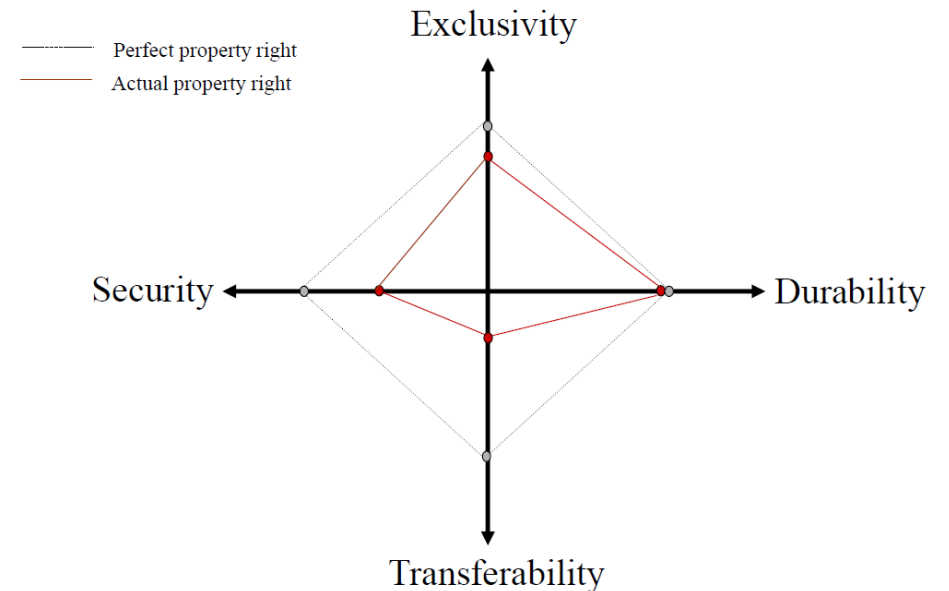
S =security, E =exclusivity, D =duration, T =transferability

$\alpha, \beta, \gamma, \delta > 0$; $w_1, w_2 > 0$, $w_1 + w_2 = 1$

Note:

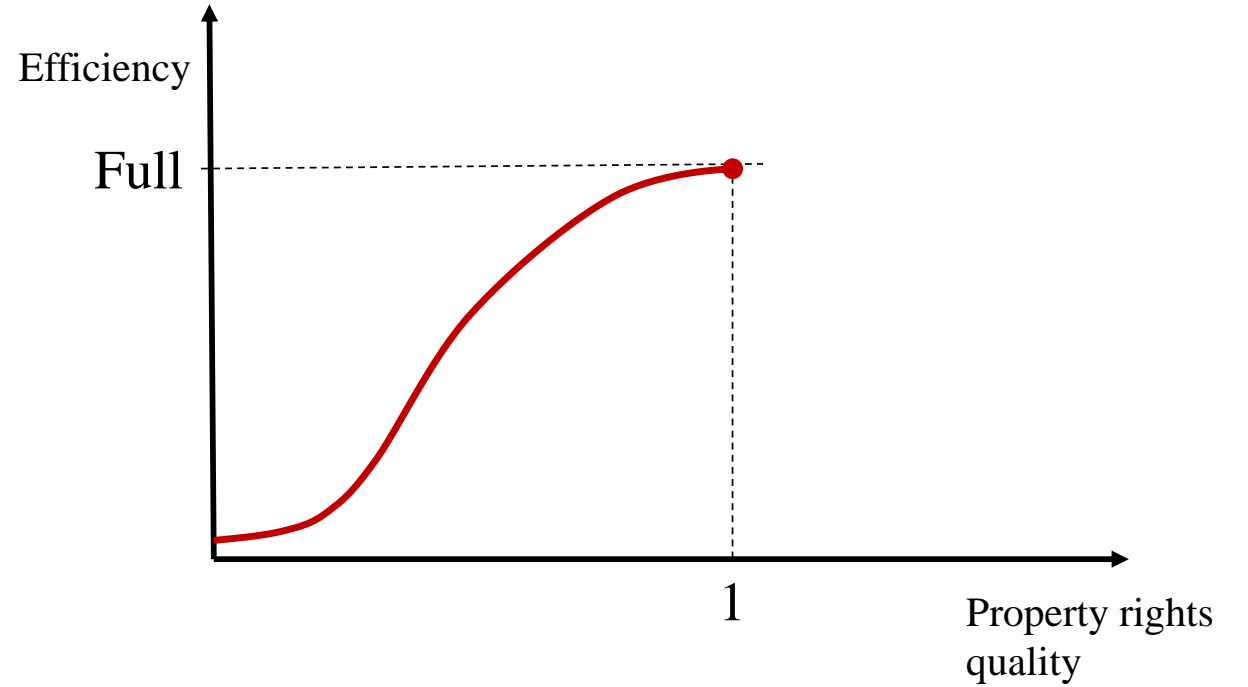
(1) S, E, D are essential; T is not

(2) $Q \in [0, 1]$



Arnason's hypothesis

Figure 2. Likely relationship between property rights quality and economic efficiency.



Applied to fisheries, Iceland's recent history

- Looking at the recent history of the Icelandic fisheries and the IQs and ITQs in particular we may clarify some of the issues that need be addressed.
- When the problem of overfishing cod emerged in the 1970s and 1980s and the government further regulated access the cod fishery, and later the bottom fisheries more generally, the share of the TAC for the main commercial fishing fleet was decided on.

Exclusivity

- Exclusivity refers to the ability of a holder to utilize a resource and manage his utilization of the resource in question without outside interference.
- The right of a fisher to go out fishing has exclusivity reciprocal to the number of other fishermen with the same right.
- A holder of an individual quota (IQ) has a right to a specified volume of harvest from a given stock of fish over a certain time period.
- However, when it comes to the actual harvesting, exclusivity refers only to his ability take this harvest in the way he prefers and to prevent others from interfering with this ability.
- Any restricting government regulations on fishing would clearly also subtract from this ability.
- The same applies to the actions of other fishers that may interfere with his ability to harvest his quota in various ways.

Exclusivity vs management of resource

Thus, an individual quota right generally provides some or even much exclusivity on harvesting but substantially less than full exclusivity to the relevant asset; the fish stock and its marine environment.

It should also be noted that the ability to enforce the exclusive right is important to exclusivity.

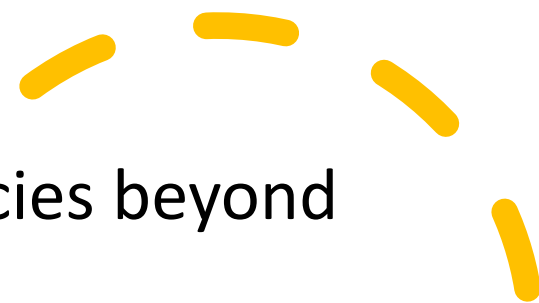
In most cases it is the role of the government to manage the pressure and utilization of the fish stock(s) and the marine environment and enforce the exclusivity of harvesters rights and the limits to their “property”.

Management and enforcement lacking

- IQ/ITQ system evolved from 1984, main commercial fleet's share of the cod was 96% and the part-time small vessel fleet (spring and summer fishing) less than 4%
- In subsequent years their share declined continuously.
- No allowance made for small vessels in the 4-6 other species of IQ/ITQs
- Access of small vessels not restricted until 1991, increased number and catch of bottom fish species, cut into the share of larger vessels.
- Some small vessels put into the main system in 1988 and 1991, or in a separate and continuously evolving system for smaller vessels with restricted gear, as in 1991, 1996, 2001, and eventually in a separate "small vessel" ITQ system in 2004.
- Effort quota option along side the IQ system in 1984-1990 and this reduced the share of the group of vessels that opted for the IQs for this whole period, especially in 1986-1987.
- IQ/ITQ system based on licensing and quota



Management
and
enforcement
lacking

- 
- Total catch in quota species beyond their TAC
 - Gradual decline in the share of the TAC for larger vessels and also a decline in the share catch
 - Enforcement was lacking in keeping the less restricted small fleet within their allowed TAC.

Herring fishery

- Evolution in herring fishery similar, after the moratorium was lifted in 1975.
- Vessels that had a catch history from the 1960s were eligible to apply for licenses.
- The larger vessels, using purse seine gear, could apply for a quota license, while the smaller vessels could apply for driftnet license.
- The TAC was split, half for the purse seiners and half for the drift netters.
- The purse seiners share in the TAC was then allocated in equal size (amount) quotas to each licensed vessel, while there was a common TAC for the drift netters. In subsequent years the share in the TAC for the drift netters declined slowly and eventually zero, mostly because interest disappeared as it became less profitable.
- During this decade from 1975 the catch was in excess of the TAC each season, for both the purse seiners and the drift netters.

Politics!

- Government also cut large vessel share for
 - Efficiency Fund,
 - community/regional quotas,
 - summer coastal fishery,
 - 5.3% rule,
 - etc.
- Special tax on quotas (actually on harvesting the catch that the quota entitles).

Short duration, then permanent

- Looking again to the history of fisheries management in Iceland in recent years, the laws and regulations that introduced licensed access and IQs essentially provided short duration of rights or entitlements.
- Licensing with an attached quota in the herring and capelin fisheries only had seasonal duration in the first decade or so, from the late 1970s to late 1980s.
- For the cod and bottom fish, the duration was for one year in 1984 and 1985, then 2 years in 1986-1987, and later 3 years in 1988-1990
- Became “permanent” or indeterminate in duration in 1991.
- Despite the short duration, these IQs were made transferable (ITQs) within the fishing season/quota period in the 1980s.
- This short duration before 1991 most likely affected their value, even though many vessel owners formed expectations rather quickly that the ITQs would eventually become permanent.

Flexibility

- Icelandic system has flexibility, incentives for behaviour that promotes landing of all catch.
- Early days of IQ/ITQ system, flexibility allowed to land up to 5% above quota and carryover 10% between periods
- Later increased to 20%, then decreased to 15%, while landings of cod above quota was prohibited.
- Changes also allowed limited interchange between species, counting landing of one quota species against unused quota in other species, although not cod. Similar but lesser amounts of landings and carryover were introduced for other non-demersal species.
- Flexibility regarding juvenile/undersize fish, incentive to land that catch instead of discards.

Restricted flexibility

- Restricted flexibility, to keep quota share between periods, vessel has to utilize a minimum of 50% of its quota.
- In the earlier days of the system there was more flexibility, in that each vessel only had to harvest its quota every other year. The ability of a vessel owner in leasing his quota has therefore diminished with this rule change.
- Another restriction on flexibility is the cap on the amount of quota any individual or firm can own, which was introduced in the late 1990s.
- Original cap was 10% for cod, 20% for other species, and 8% of the total quota (in cod equivalent terms) or 12% for a firm where no owner has more than 20% of the company stock.
- Small vessel quota system, the cap is 4% for cod, 5% for haddock, and 5% of the total.
- Foreigners can not own or lease quotas, which of course limits the number or size of the group that Icelandic vessels can trade the quota to.
- Foreign persons and firms can in fact not own more than a 25% share of company stock of any company that owns quota or a company that owns a company that own quota.

How good a quality is ITQ title?

- The rights are rather like entitlements to use a resource, user rights or withdrawal rights may be the more appropriate wording.
- Legal scholars (and others) may disagree on whether the „fishers rights“ are or should be property under the law.
- It is therefore by law easier for the government to extend or reduce/restrict these rights.
- Although these rights, licenses and individual quotas, become valuable in a well governed fishery,
- Rights do not have features that most property has, such as allowing the “owner” to put the “property right” up as collateral or being directly inheritable.
- Nonetheless, the government and its agencies do look on these rights as valuable “assets” and treat them as such for tax purposes.
- And when it comes to collateral, financial institutions do assess the value of these rights when they look at the value of a vessel as collateral for loan, and in divorce or inheritance cases the courts to look to the value of these rights.
- So indirectly at least, these rights seem to pass as property in above.

...and in Iceland

- The combined share of the fleet of larger fishing vessels was reduced continuously in the early days of the ITQ system and in fact up until 2010.
- This declining share may be described as a lack security from government taking.
- But there was also encroachment from others, total landings of many species were well above TACs for many years.
- The source of this overfishing lay in the lack of enforcement of property rights, resulting in less quality of title for ITQ holders.

Transferability

- Transfer of annual catch entitlement (ACE) allowed from start in 1984
- Transfer of ITQ shares from 1991.
- Incentives for vessel retirement before 1991 – transfer ITQ shares of 2+ vessels to 1
- Quotas can only be attached to vessels and no vessel should have more quota registered to its name than the vessel can reasonably catch during the fishing year.
- This limits the number of individuals and firms that quota holders can trade quota with.

Restrictions on transfers

- A quota holder has to utilize a minimum of 50% of his quota each year for his vessel to keep the quota share. This means that vessel must be operated and harvest half its quota each year.
- This restricts the ability of a vessel owner in leasing only half his quota each year. Was less restrictive earlier.
- Local government has right of preemption on trade of quota from the community. Rarely exercised.
- Restrictions prevent foreign persons and firms from operating under the Icelandic system. Foreigners therefore cannot own or lease quotas, which of course limits the number or size of the group that Icelandic vessels can trade the quota to.



Divisibility

The horizontal and vertical divisibility both apply and both are present

Vessel owners can trade both part(s) of their ITQ share and part(s) of their annual catch entitlement (ACE)

We can look to the ACE as temporal aspect of the ITQ share



Characteristics
not
independent

Exclusivity incentivizes good management of resources but does so through the enforceability of the exclusivity.

If enforcement is not possible there are less incentives for good management and “exclusivity” might then be lacking.

- Enforcement is most often outside, government enforcement
- Management is most often outside, government decides (at least in developed/western world)



Thanks!