

# Strong User Rights

Short-run and long-run  
advantages and disadvantages

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# 1. Introduction.

The purpose of this presentation is:

“Present a list of short-run and long-run advantages and disadvantages of introducing strong user rights in fisheries”.

If you have some additional advantages and disadvantages apart from those I present they will added afterwards.

The presentation is based on the definition of strong user rights provided by Ragnar.

However, my list over advantages and disadvantages has not been coordinated with Ragnar. We will try to make a common list after the meeting.

## 2. Limitations.

Note that when I talk about strong user rights I mean a change in a regulatory approach from weak user rights to strong rights.

Many of the advantages and disadvantages I mention are closely related in the sense that strong user rights affects an economic system in a complex way.

Despite this each advantages and disadvantages is treated separately in the presentation.

Furthermore, some of the advantages and disadvantages follow directly from introducing strong user rights while other only arise indirectly.

Despite this, I will not distinguish between direct and indirect effects of strong user rights.

Finally, the advantages and disadvantages may differ with respect to the time when they arise. In economics it is common to distinguish between short-run or long-run and I follow this tradition for the economic effects. However, for non-economic effects I will not explicitly distinguish between short-run and long-run effects.

### 3. Structure of the list.

There are many possible ways for a categorization of advantages and disadvantages from strong user rights but I have chosen the following:

- a. Efficiency related economic effects.
- b. Non-efficiency related economic effects.
- c. Social effects.
- d. Environmental and biological effects.

As a point of departure I have based the list on a existing literature but often I will not refer explicitly to scientific papers since the arguments can be presented in a very intuitive way.

## 4. Efficiency related economic effects.

Here a natural question is how to define short-run and long-run effects. It is common to claim that under open-access free entry and exit imply that the profit is driven to zero in a fishery.

One implication of this result is that it is often implicitly assumed that the industry structure in fisheries adjust immediately to an equilibrium. However, in general economic theory short-run captures decisions on output and variable inputs for a given industry structure while long-run express adjustments of the industry structure.

Here I follow the traditional in general economics so short-run captures effects for a given industry structure while long-run is about the (optimal) fleet structure.

## 4. Efficiency related economic effects.

I have identified the following short-run advantages:

- a. Strong user rights imply a reduction in fishing effort and other inputs used in fisheries.
- b. Strong user rights tend to initially decrease the harvest due to the reduction in the use of inputs.
- c. Strong user rights imply a reduction in marginal harvest costs at any given level of harvest and biomass.
- d. Strong user rights increase the profit earned in fisheries.
- e. Under various kinds of uncertainty the welfare loss under strong property rights will probably be low (see Jensen and Hansen, 2021). Following Weitzman (1974) an explanation for this result is that the slope of the relevant curves will be non-extreme.

## 4. Efficiency related economic effects.

### Short-run advantages (continued):

f. Under very strong user rights (ITQs) a total quota is normally fixed and then this quota is distributed to fishermen as ITQs. Now trade with ITQs on a free market without market failures will secure an optimal distribution of the total quota between fishermen where the marginal profit of harvest is identical. If the total quota is set equal to the economically optimal harvest level a first-best optimum is obtained while a total quota equal to the harvest under a non-economic goal secure a second-best optimum.

g. In line with the Coase theorem strong user rights held by fishers imply that other users can affect the state of an eco-system through bargaining. Thus, strong user rights may contribute to an eco-system based approach.

## 4. Efficiency related economic effects

I have identified the following short-run disadvantages:

- a. Strong user rights normally put a quantity restriction on fishermen and given this restriction there can be an incentive to illegal harvest. As indicated by Sutinen and Andersen (1985) this imply that an enforcement policy must be imposed and such a policy can be costly.
- b. From above an efficient allocation of a total quota require that the marginal profit is identical between vessels and/or fleet segments. Now under moderately strong user rights (IQs) an optimal allocation of the total quota requires that the regulator collects a huge amount of information and this is costly (see Frost et al, 1994).
- c. Under strong user rights a total quota is normally distributed as a fixed share of a total quota. Now if the total quota varies over time due to random variations in the stock size the individual quota will also vary randomly and if the fishermen are risk averse this will reduce the expected utility of the profit (see e.g. Ewald and Wang, 2010).



## 4. Efficiency related economic effects

### Short-run disadvantages (continued):

d. Strong user rights with quantity restrictions are normally used for some species while no regulation is imposed on other species. Undesirable substitution of the harvest between regulated and unregulated species may occur leading to efficiency losses (see Asche et al, 2007).

e. In multi-species fisheries discards may occur and Arnason (1994) points out the optimal amount of discard is not obtained under strong user rights but under very weak rights.

## 4. Efficiency related economic effects

### Short-run disadvantages (continued):

f. Under strong user rights high-grading may occur (see Anderson, 1994). Within an age-structured model this may imply recruitment and spawning stock over-fishing which may lead to an undesirable year class distribution of the stock (see Tahvonen, 2009 and 2010).

g. Inspired by the analysis by work by Hanley et al (1997) on EU-ETS ownership and management (the skipper) is generally separate from owners on large commercial vessels. Thus, a principal-agent relation arise and the skipper (agent) may have an incentive to deviate from the optimal behavior as defined by the owner (profit maximization).

## 4. Efficiency related economic effects

### Short-run disadvantages (continued):

h. In relation to EU-ETS Edenhofer et al (2017) mention that an assumption behind very strong user rights (ITQs) is that quota trades take place on a free market. However, in reality trade with quotas occur in bilateral bargaining process between two agents. Thus, the bargaining assumption behind very strong user rights is not necessarily fulfilled.

i. Limpaltoon et al (2014) mention that the EU-ETS market may be dominated by very large firms which implies that there may be imperfect competition on either the supply and demand side or both. This implies a non-optimal price of quotas and, therefore a non-optimal number of quotas, being traded.

j. Strong user rights only take the profit earned by fishermen in a marine area into account. If bargaining between users is not possible it can be difficult to take a broader set of benefits and costs for other actors from marine areas into account (an eco-system based approach).

## 4. Efficiency related economic effects

I have identified the following long-run advantages:

- a. Strong user rights imply that an optimal fleet structure is reached. Under increasing-returns to scale this implies fewer vessels, less capital and less use of other inputs.
- b. Strong user rights imply that optimal investments in new technology is secured.
- c. Strong user rights imply that an optimal level of specialization in the fishing industry is obtained.

I have identified the following long-run disadvantages:

- a. From Wenninger and Just (2002) there may exist a long transition period before the optimal fleet structure is reached under strong user rights. One explanation for this fact is that sunk costs exist.

## 4. Efficiency related economic effects.

### Long-run disadvantages (continued):

b. The optimal fleet structure can be defined by using the minimum of a socially optimal average cost curve. Now the choice between auctions and grandfathering matters for whether the private and social optimal average costs curve are identical (see e.g. Hanley et al, 1997). From environmental economics the total damage costs must be added to the private production costs to obtain the social optimal average costs. Under grandfathering the firms does not pay for the damage while this is the case for auctions. Thus, auctions but not grandfathering secure an optimal industry structure in the long-run. For fisheries there is an increase in the profit of moving from weak user rights to strong user rights and this profit must be subtracted from the production costs to reach a social optimal average costs curve. This is secured under grandfathering but not under auctions. Thus, for fisheries grandfathering but not auctions secure an optimal industry structure in the long-run.

## 5. Non-efficiency related economic effects.

I have identified the following short-run advantages:

- a. Since the overall profit will increase, strong user rights will increase the overall economic activity in a society due to a short-run macro-economic multiplier effect.
- b. Strong user rights have positive effects on related industries such as processing and fishing marketing.
- c. Strong user rights may imply vertical integration of activities related to fisheries.
- d. Since the overall profit will increase, the overall employment level in fisheries in a society will increase under strong user rights.
- e. Strong user rights may increase the overall tax revenue in a society due to the increase in the profit and the multiplier effect.

## 5. Non-efficiency related economic effects.

Short-run advantages (continued):

- f. An increase in the profitability of fishing “in regions with efficient vessels” will imply an increase in the regional economic activity under strong user rights due to a regional short-run macro-economic multiplier effect.
- g. Strong user rights may have a positive effect on the employment “in regions with efficient vessels”.
- h. Strong user rights may increase the tax revenue “in regions with efficient vessels” since the profit increase and a multiplier effect exist.

## 5. Non-efficiency related economic effects.

I have identified the following short-run disadvantages:

a. "In regions with inefficient vessels" the regional economic activity may decrease under strong user rights due to a regional short-run macro-economic multiplier effect.

b. Strong user rights may imply problems for poor regions that are very dependent of fisheries. If these regions contains inefficient vessels the economic activity decreases.



## 5. Non-efficiency related economic effects.

### Short-run disadvantages (continued):

d. Strong user rights may have a negative effect on the employment “in regions with inefficient vessels”.

e. Strong user rights may decrease the tax revenue “in regions with inefficient vessels” since the profit decrease and a multiplier effect exist.

## 5. Non-efficiency related economic effects.

I have identified the following long-run advantages:

- a. Since the profit from fisheries increase the overall economic activity in a society will increase under strong user rights due to a long-run macro-economic multiplier effect.
- b. Strong user rights may increase the overall growth in a society since fisheries become more profitable.
- c. An increase in the profitability of fishing “in regions with efficient vessels” will imply an increase in the regional economic activity under strong user rights due to a regional long-run macro-economic multiplier effect.
- d. Strong user rights may increase the growth “in regions with efficient vessels” since fisheries become more profitable.

## 5. Non-efficiency related economic effects.

I have identified the following long-run disadvantages:

- a. "In regions with inefficient vessels" the economic activity may decrease under strong user rights due to a regional long-run macro-economic multiplier effect.
- b. Strong user rights may decrease the growth "in regions with inefficient vessels" since fisheries become less profitable.

## 6. Social effects.

I have identified the following short-run and long-run social advantages:

- a. Strong user rights alter the distribution of the economic activity between regions dependent on fisheries. "In regions with efficient vessels" this may reduce social problems.
- b. With strong user rights the most efficient fishermen obtain most gains from improved management. Some would consider this as a fair distributional outcome in a society.

## 6. Social effects.

### Short-run and long-run advantages (continued):

c. From a more ethical, political and/or philosophical perspective, strong user rights imply that the fishermen own fish stocks. Some would consider this as a desirable property right structure.

d. Moving from very weak to strong user rights changes the power structure in a society in a complex way: However, in general the change in the property right structure implies that power is transferred from the state to the fishing industry and this may be considered as a desirable result.

## 6. Social effects.

I have identified the following short-run and long-run social disadvantages:

- a. Strong user rights alter the distribution of the economic activity between regions dependent on fisheries. "In regions with inefficient vessels" this may cause social problems.
- b. With strong user rights the most efficient fishermen obtain the main gain from improved management. Some would consider this as a unfair distributional outcome in a society.

## 6. Social effects.

Short-run and long-run disadvantages (continued):

c. From a more ethical, political and/or philosophical angle strong user rights imply that the fishermen own fish stocks. Some would consider this as a less desirable property right structure.

d. Moving from very weak to strong user rights change the power structure in a society in a complex way: However, in general due the change in the property right structure imply that power is transferred from the state to the fishing industry and this may be considered as a less desirable result.

## 7. Environmental and biological effects.

I have identified the following short-run and long-run environmental advantages:

- a. Within a single-species model strong user rights tend to increase the stock size because the harvest decrease.
- b. In a multi-species model the implications of strong user rights are more complex. However, if the stock size of a prey species increase due to strong user rights the stock size of a predator will also increase.
- c. Since the stock size within a single-species model increase under strong user rights there is less risk for a catastrophic event arising because of for example pollution.
- d. Strong user rights imply that fishermen gets an added incentive to protect the marine environment.



## 7. Environmental and biological effects.

In the following short-run and long-run environmental disadvantages:

- a. Within a predator prey model if the stock size of a predator increase under strong user rights the stock size of the prey will decrease.
- b. If a constant share of a stock size of a fish species dies because of pollution a higher number of fish will be removed due to pollution under strong user rights because the stock size will increase.

## 8. How to proceed from here.

As a first step we have to:

- a. Clarify the relation between the advantages and disadvantages taking into account that one effect influence another effect in a complex economic system.
- b. Clarify whether the advantages and disadvantages is directly or indirectly generated by introducing strong user rights.

After this we have to decide how to weight the advantages and disadvantages together.

## 8. How to proceed from here.

A popular approach for doing so is to conduct a cost-benefit analysis.

Here we try to put a monetary value on each advantage and disadvantage.

However, the monetary values is assumed to be a measure for the utility and profit of each advantages and disadvantages to people in a society and then these values are added.

Thus, we implicitly assume that all advantages and disadvantages have an equal weight and in our case this is not obvious.

## 8. How to proceed from here.

If we alternatively want to find a weight which can be imposed on each advantage and disadvantages at least two options exist:

- a. Use multi-attribute utility theory. Here the idea is to find the relative importance of each advantage and disadvantages in a utility function and this can be done by conducting surveys among ordinary people.
- b. Use multi-criteria analysis. Here the idea is to find the relative weight imposed on each advantages and disadvantages in the objective function of a decision maker. This can be done by conducting surveys among politicians or experts.

So could it be an idea to use multi-attribute utility theory or multi-criteria analysis instead of conducting a cost-benefit analysis in this project?