

# 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”.

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

There are many possible ways for categorizing the 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.

# 1. Introduction.

When I talk about strong user rights I mean a change in a regulatory approach from weak user rights to strong user 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 implications 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 advantages and disadvantages.

## 2. Efficiency related economic effects.

To categorize short-run and long-run economic effects at least two traditions seems to exist:

- a. Short-run effects is related to adjustments in a flow variable while the long-run effects capture changes in a stock variable. Within fisheries economics this implies that short-run effects is related to harvest and/or fishing effort while long-run effects concerns the stock size. I follow this definition but effects on the size of fish stocks is placed under environmental and biological effects.
- b. From general economic theory short-run effects captures decisions on output and/or variable inputs for a given industry structure while long-run effects mainly affect the industry structure. In fisheries economics it is common to claim that under open-access free entry and exit imply that the profit is driven to zero in a fishery. To analysis open-access a convenient assumption is that the industry structure adjust immediately to an equilibrium. However, in this presentation I will follow the traditional in general economics so short-run effects is identified for a given industry structure while long-run effects captures implications for the fleet structure.

Note that these two definitions does not necessary differ since the fleet structure can be interpreted as a stock variable (a stock of capital).

## 2. Efficiency related economic effects.

I have identified the following short-run advantages:

- a. Strong user rights imply a reduction in fishing effort.
- b. Initially strong user rights tend to decrease the harvest due to the reduction in fishing effort.
- c. Strong user rights imply a reduction in marginal harvest costs at any given level of the harvest and stock size.
- d. Strong user rights increase the profit earned in fisheries.
- e. Under various kinds of uncertainty the efficiency loss due to stochastic events (compared to full certainty) will probably be low under strong property rights (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.

## 2. 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 with perfect competition and no transaction costs 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 objective (for example MSY) secure a second-best optimum.

## 2. Efficiency related economic effects.

### Short-run advantages (continued):

g. 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). Under very strong user rights (ITQs) the allocation problem is solved throughout trade with quotas. Furthermore, moderate user rights may perform better than very weak user rights with respect to the allocation of a total quota.

h. 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 realize the goals identified with an eco-system based approach. However if bargaining between users is not possible, it can be difficult to take a broader set of benefits and costs for other users into account under strong user rights.

## 2. Efficiency related economic effects

I have identified the following short-run disadvantages:

- a. Moderate and 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. However, it is difficult to compare very weak user rights, moderate strong user rights (IQs) and very strong user rights (ITQs) with respect to the incentive to illegal harvest and the costs of an enforcement policy.
- b. 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).



## 2. Efficiency related economic effects

### Short-run disadvantages (continued):

c. 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 therefore occur leading to efficiency losses (see Asche et al, 2007). However, it is difficult to compare the incentive to substitution between regulated and unregulated species under moderate strong user rights and very strong user rights.

d. In multi-species fisheries discards may occur. Now Arnason (1994) points out that if strong user rights is not perfectly differentiated with respect to the grade of fish an optimal amount of discard is not necessarily obtained under strong rights but under very weak rights. However, it is difficult to compare the incentive to discard under moderate strong user rights and very strong user rights.

## 2. Efficiency related economic effects

### Short-run disadvantages (continued):

e. If strong user rights is not perfectly differentiated with respect to the age of fish species 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 distribution of a fish stock on various year-classes (see Tahvonen, 2009 and 2010). However, it is difficult to compare moderate strong user rights and very strong user rights with respect to the incentive to high-grading.

## 2. Efficiency related economic effects

I have identified the following long-run advantages:

- a. Strong user rights may imply a desirable adjustment in the fleet structure towards fewer vessels.
- b. All other things equal strong user rights tend to increase investments in new technology.
- c. All other things equal strong user rights tend to imply a desirable adjustment of horizontal and vertical integration in a fishing industry which reflects the degree of economics or dis-economics of scale and scope.

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. Explanations for this fact is sunk costs, non-malleable capital and adjustments in the stock size of fish towards a potential steady-state equilibrium.

### 3. 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. Since the overall profit will increase, the overall employment level in fisheries in a society will increase under strong user rights.
- c. Strong user rights may increase the overall tax revenue in a society due to the increase in the profit and the multiplier effect.

I have identified the following short-run disadvantage:

- a. The effects under a-c may also be considered at a regional level. Now some regions will gain from introducing strong user rights while other regions will loss.

### 3. Non-efficiency related economic effects.

I have identified the following long-run advantages:

- a. The effects on the economic activity, employment and tax revenue will also arise in the long-run and the short-run and long-run effects will differ.
- b. Strong user rights may increase the overall growth in a society since fisheries become more profitable.

I have identified the following long-run disadvantage:

- a. The effects under a-b may also be considered at a regional level. Now some regions will gain from introducing strong user rights while other regions will loss.

## 4. Social effects.

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

- a. Strong user rights alter the distribution of the economic activity between regions dependent on fisheries. Thus, some social problems will be reduced while other problems will increase. A regional difference in the size of social problems will also arise.
- 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 while others would claim it is unfair.

## 4. Social effects.

### Short-run and long-run advantages and disadvantages (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 while other would consider it as a undesirable property.
- d. Moving from very weak to strong user rights changes the power structure in a society in a complex way. In general power is transferred from the state to the fishing industry and this may be considered as both a desirable and undesirable result.

## 5. Environmental and biological effects.

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

- a. Within a single-species model strong user rights tend to increase the stock size of fish because the harvest decrease. The increase in the stock size under strong user rights imply less risk for a catastrophic event leading to extinction of the fish stock.
- b. In a multi-species model the implications of strong user rights are more complex. Often long run dynamics adjustment paths are very complicated and/or unstable. However, in general if strong user rights leads to an increase in the stock size of a prey species the stock size of a predator will also increase while the stock size of the prey will decrease if the stock size of a predator increase.
- c. Strong user rights imply that fishermen gets an added incentive to protect marine environments.