

NOS-H Project

Advantages and disadvantages of strong user rights in fisheries

June 4 2021

Workshop 1

Attendees: Ragnar, Frank, Håkan, Rasmus, Marko, Birgir, Trond, Zvonko, Sveinn.

Review of project aims/tasks

This was the first meeting in the project. It has been delayed by a year but the project received a year extension. It is due to be finished in May/June 2022.

Next meeting is planned in Copenhagen in September/October, depends on Covid subsiding sufficiently.

Final meeting will be around April/May possibly in Gothenburg.

Summary of points to keep in mind after Workshop 1

- Long-run vs. short-run: Keep equilibrium in mind.
- Downward sloping marginal cost?
 - Industry vs. individual units.
 - Increasing returns to scale infinitely?
- Strong user rights demand enforcement – Costly! – If the cost of enforcement is too great then it is not worthwhile to have these strong user rights.
- Assumption of risk neutrality vs. risk aversion
 - Larger companies risk neutral while individual units risk averse?
- Unavoidable (transaction) costs are not disadvantages – They are simply a part of reality. Man-made (transaction) costs are avoidable and are disadvantages.
- Nature produces variability = uncertainty and reduces utility assuming risk aversion. However, there exists an optimal response to this uncertainty even though it may include some costs. – Natural variability is not necessarily a disadvantage – just reality.
- Strong user rights for one species may have negative consequences for another species - disadvantage. Fixable by more comprehensive ITQs?
- Principal-agent problem: Big or small problem? A bigger problem under strong user rights than weak?
- A long transition period is not necessarily a disadvantage.
- The overall effect on employment levels are ambiguous – higher wages are likely

- How gained benefits are used can decide whether overall welfare is increased or decreased.
- User rights does usually not imply ownership of fish stock, just rights to harvest. However, people's perception of this also matters.
- Environmental effects seem to need special attention - Complex
- There are some issues with Ragnars Q-measure – needs to be developed further and clearer definitions of each attribute while still focusing on what is *needed* for this project.
- International fisheries need special attention (25% of volume is caught in international fisheries)
- Keep future technology in mind.
- Grandfathering vs. auctions: For pollution auctions are best but for fisheries grandfathering is better. Auctions take away the whole benefits.

Plans

- Discussion on what we want the final products to be – joint papers are more work than a collection of papers and loses some interesting points
- Ragnar will make an inquiry: Marine Resource Economics – Special issue.
 - Can also invite other people to participate
- Marko and Trond do something on international fisheries before next meeting.

Participants are asked to:

- Give written comments on slides – perhaps have a master document.
- Find time to write memos/papers
- Think about how the work would be published/presented
- More narrowly define topics (for papers etc.)
- Send Frank e-mails regarding possible dates for the next meeting in Copenhagen. Focus is on weekdays in September/October (not last week of Sept.). Frank will decide on dates.

Focus should be on good and bad consequences of strong user rights:

- Some are more important than others
- Some are avoidable while some are not
- Resulting policy implications.

Presentation 1 – Frank Jensen

Slide 5: Short-run vs. long-run properties

- Ragnar: When discussing the short-run and long-run effects it is beneficial to mention equilibrium. When flow variables reach equilibrium it is short-run effects but when stock variables reach equilibrium it is long-run effect. Note that there is disequilibrium in flow variables during adjustment of stock variables.

Slide 6: Efficiency related economic effects

Point c) *Strong user rights imply a reduction in marginal harvest costs at any given level of the harvest and stock size.*

- Håkan: Where there are poor property rights there are too many actors which are operating with poor capacity and in a range where they have a downward sloping MC. Are these returns in scale in fisheries infinite?
- Ragnar: If MC of harvest/effort are declining under open access then that cannot be an equilibrium. We have to distinguish between the industry as a whole and individual operations. MC might be declining for the industry as whole but not individual operators – that could not be equilibrium.
- Håkan: Individual units must be operating with increasing operating costs. Capacity utilisation is most likely fairly low.

Slide 7: Efficiency related economic effects: SR-advantages

Point 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.*

- Ragnar: If there are strong user rights then bargaining must be possible. Transaction costs may prevent trade/bargaining, but transaction costs are a reality. If transaction costs are unavoidable there is no loss in efficiency, if however, they are man-made then there is a loss in efficiency.
- The Coase theorem is based on very restrictive assumptions (e.g. full information). In real life some of these assumptions will not hold and hence efficient bargaining may not proceed. It may be desirable to take this into account when distributing strong user rights – make a system to make sure bargaining is taken care of.
- Note that strong user rights need to be enforced. Net benefits of strong user rights are less than would seem because of this cost of making them strong. – If the cost of enforcement is too great then it is not worthwhile to have these strong user rights.

Slide 8: Efficiency related economic effects: SR-disadvantages

Point 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).

- Trond: Random variation in stock size is very common. What is the alternative?
- Frank: The basic alternative to avoid this random variation is to fix it for example by securing fishermen a given quota. Then maybe we will not always reach the economically optimal stock size but we would overharvest in some years and underharvest in other.
- Håkan: If you have fast adjustment or fast adjustment to perfect information – it is worth it. More costly to let them harvest suboptimally. You would like to have some kind of consumption smoothening – credit market.
- Håkan: This risk averse assumption that we have is convenient – but it is suboptimal to be risk averse should be risk neutral.
- Frank: If fishers are risk averse then there is loss in utility and welfare with these fluctuations and uncertainty.
- Birgir: In financial economics they use risk neutrality: fits better when we have these big companies in fisheries rather than risk averse individuals.
- Ragnar: There is variability in nature and there is an optimal response to that variability. The quota setting authority should aim to doing so. If that causes discomfort to fishermen or fish sellers etc. So be it because this is the optimal response to the uncertainty. It is questionable whether this can be regarded as a disadvantage. We need someone to set total quota and he will make errors – that is a disadvantage.

Point 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.

- Ragnar: If we impose strong user rights for part of eco-system – then the negative consequences may increase in magnitude for other species. This can be regarded as a disadvantage. But from another perspective we can say that the ITQ are not comprehensive enough.

Slide 9: Efficiency related economic effects: SR disadvantages

Point 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.

- While discarding under weak user rights is optimal it is optimal relative to weak user rights.

Point 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.

- Ragnar: Again the user rights are not strong enough.
- Frank: But can we do that?

Point f) *By using general economic theory ownership and management (the skipper) may be separated 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. Under very strong user rights this may affect the incentive to trade with quotas while it may generate an non-optimal level of illegal harvest under moderate strong user rights.*

- Rasmus: What about high cost of buying quotas? Barriers to entry. Big companies maybe buy more quota than they use just as insurance. Are big companies really using user rights optimally?
- Håkan: Entry problem theoretically should not be a big issue – perfect credit markets – you just get a loan. But elsewhere you are in a second-best, there the principal agent problem is bigger. E.g. where the principal owns the quota and rents it out to fishermen who have no long-term perspective for fishermen. Hard to control agent when he does not have incentive.
- Trond: I think this depends on fisheries and circumstances. Highly industrialized fisheries – obviously hire skippers for work – but they are continuously monitored, what they harvest, where they are etc. Difficult to see what kind of PA problem could arise.
- Frank: Still thinks this is a problem and has been a problem. Asymmetric info is much lower in fisheries than other industries.
- Trond: In some countries only certain classes of people have the right to own fishing vessels – has an impact on what we are talking about.
- Ragnar: i) is this PA problem bigger under strong user rights than weak? Not obvious. ii) If there are PA problems, then those problems and costs will be borne by the owner of the rights. He will hopefully make a sensible decision regarding the problems. He presumably will do this in the optimal way.
- Sveinn: The stronger user rights then the more overlooking the operator will be? More likely optimal contract.

Slide 10 – Efficiency related economic effects: LR

Advantage – Point 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.*

- Håkan: Would be fun to link to more empirical analyses.
- Birgir: There was vertical integration in Iceland before the ITQ system.

Disadvantage - Point 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.*

- Trond: If there are not strong user rights there is no transition. We would expect this anywhere else. Not necessarily a disadvantage.
- Frank: Transition period is caused by regulation.
- Ragnar: Optimal to have a transition period, hence not a disadvantage, unless there is a spillover effect. Extra capital being used in transition is not being used in other industries.
- Sveinn: Long transition period may help gain approval from society. The period may also be long because of social resistance. Two-way causation.

Slide 11: Non efficiency related economic effects

Point 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.*

- Sveinn: Possibility of poverty trap if fisheries can only pay low wages. There is a possibility that it is beneficial for the quota to be bought and moved to a different area.

Point b) *Since the overall profit will increase, the overall employment level in fisheries in a society will increase under strong user rights.*

- Håkan: Not sure employment will increase.
- Frank: Profit increase means multiplier effect – probably employment increases.
- Sveinn: Employment has declined in fisheries – more compactness in companies etc. Maybe reduction in lower skilled labour in fishing and processing but an increase in higher skilled labour.
- Birgir: Maybe zero net effect on jobs but higher skilled labour with higher wages – and higher taxes hahaha :)

Point b) *Strong user rights may increase the overall tax revenue in a society due to the increase in the profit and the multiplier effect.*

- Zvonko: In the Faroe Island the Government takes an excessive part of profit and channels into the welfare system. This results in less effort to generate these profits and lost opportunities to invest in technology – It matters where these additional earnings go.
- Ragnar: If the Government takes most of the extra benefits and uses these benefits to strengthen the welfare system – may result in less welfare!

Slide 14 – Social effects: SR and LR advantages and disadvantages

Point 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.*

- Ragnar: Regarding ownership of fish stocks – user rights – most of them do not confirm ownership of fish stock just rights to harvest. Turfs are the exception – property rights in area.
- However the social perception is often that this is giving away resources, and one has to take that into account. If some users have rights to the benefits from natural resources they in a sense have certain ownership of the natural resource.

Point 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.*

- Sveinn: Profits from fishing are reinvested in other parts of society – increases power of the companies. Money is power.

Slide 15 Environmental and biological effects

- Ragnar: Strong user rights in fisheries are likely to move the eco-system closer to what it should be „pristine state“ ? – moves stock sizes to what they originally where – becomes more similar to what it was before man started hunting?
- Under strong user rights – ecosystem will move towards more commercially benefit state.
- There will be some impact on the age-distribution of the commercial stocks and in the longer run there will be a movement to selective farming of the eco-system. When we get other problems out of the way.
- Håkan: Balanced harvesting – replicate mortality from nature. Fishing should focus on younger – then lower mortality as they grow older.
- Sveinn: Protecting marine environment – protecting environment may help get into new markets – indirect benefits.
- Rasmus: In Denmark the fleet has been reduced resulting in seafloor benefits, positive effects on carbon emissions.
- Ragnar: In a certain sense under strong user rights ecosystem will move back slightly – but as user rights become more pervasive we might see a movement in another direction where certain species that were originally will be greatly reduced in stock size – predators while commercial species will increase.

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Presentation 2 – Ragnar Arnason

Slide 3: Quality of property rights

- Håkan: Tony Scott's book on property rights he has 6 characteristics of property rights instead of 4 as Ragnar does. Ragnar is missing flexibility and divisibility but he points out that the latter is a subset of transferability.

Slide 6: Q-values for common user rights in fisheries

- Håkan: Points out that number might be different. Would TURF with 100 users also have exclusivity 0,01? Common pool TURF is like a common pool resource. Ragnar points out that these are just examples.
- Birgir: One minor problem – they are interrelated not independent. Each attribute has subattributes. Eg. What exactly does exclusivity mean? Exclusivity and security are interrelated. - > This should be developed further.
- Frank: You could make S function of E or D.
- Ragnar: Disagree – should be defined in a way that they are perfectly orthogonal.
- Birgir: what is the difference between little exclusivity and much?
- Frank: Need to clearly define the attributes.
- Ragnar: This is very complex. We just want to establish what we mean by strong and weak user rights. We need to cover this ground for completeness but only roughly.
- Zvonko: Need to take into account the possibility of international trade and domestic governance. Transferability that is only allowed within a country should not receive a value of 1.

Slide 10-11 Social Impacts

- Trond: Different types of fisheries and the outcomes will depend on the type of fishery. Traditional owner operator structure, capital income will benefit local region. But for more industrialized fisheries the owners may be different from the operators the capital income will leave the region. This definitely has social impact.
- Trond: Regarding labour – workers in processing are imported from other countries. Matters regarding social impact.

Slide 12: Environmental impacts

- Håkan: On the last points, I agree we could foresee more marine spatial planning. Some fishery grounds lost but more of interaction between actors and primarily depends on the legal situation. As long as you are in extended economic zone there are legal
- Curious - Fewer vessels may not mean that total impact will be lower – related to discussions on returns to scale. Possible that we may increase damages.
- Ragnar: What I really mean, the total volume of gear will be less than before. I think commercial stocks is bound to increase because the problem was that it was too small to start with. Long lasting rights – more concern for marine health in general because it impacts them more greatly because their rights are long-term.
- Legal framework has great effect.

- Frank: If pollution kills fixed share of stock and larger stocks --> more death by pollution.
- Trond: May be worthwhile to look at international fisheries. Bluefin tuna fisheries have ITQs. But when it comes to selling quotas between countries it happens to some extent but very complicated. International fisheries approx. 25%. (Similar to Hakans point before).
- Ragnar: What is the point of reference; region, country, global?

Marko's points in the end:

- How strong property rights is optimal and in what sense?
- How to develop the comparison between weak and strong?
- Effect of expiry times and other properties of user rights
- Linking user rights to other sectors, water area rights, food sector (future- will fish be grown in labs? – how does that affect the systems we are developing) etc. Tourism (recreational fisheries), wind power, transport etc
- International aspects (agreements, trade etc) and effects – Needs to look into when there are many countries with different rights.
- Effects on climate change (use of carbon etc) – What is the effect on CO₂?