Getting the Economics and the Incentives Right: Instrument Choices in Rebuilding Fisheries

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Introduction

- My assignment is to give a broad overview of the economics of rebuilding fisheries, and the role of incentives
  - Dan and Sherry will provide detailed analyses of the various aspects of the issue
- I will draw heavily upon work that I have been doing for the FAO and World Bank on a follow up to their report - ***The Sunken Billions: The Economic Justification For Reform***

A Fundamental Economic Proposition

- All natural resources are (real) capital assets from society's point of view -
  - capture fishery resources- a segment of society's portfolio of "natural" capital assets
- A fishery rebuilding program is, therefore, an investment program
  - every (positive) investment involves a cost, which is incurred in hope of a future payoff
  - if the right incentive structures are not in place, no assurance that investment cost will be willingly borne

Levels of Incentive Structures

- I would argue that there are two levels of incentive structures that we have to consider:
  - intra-EEZ, where the incentives involved concern fishers (or companies)
  - international, where the incentives involved initially concern fishing states/entities - internationally shared fish stocks, with particular emphasis on highly migratory, straddling and discrete high seas stocks
  - the two levels are, of course, interrelated

Investment Programs: The Two Questions

- With any (real) investment program, economists ask two questions:
  - what is the optimal, or target, stock of capital?
    - answer – invest up to the point that the cost of marginal resource investment is equal to payoff in terms of present value of expected stream of additional resource rent (broadly defined)
  - what is the optimal rate of investment – fast or slow?
    - answer – much trickier – depends critically on ease with which fleet/processing capital and human capital can be shifted in and out of fishery.

Resource Investment Payoffs

- Can we really be certain of positive investment payoffs? Two reasons for concern:
  - depletion of some fishery resources may effectively be irreversible - determine feasible set of resource investment opportunities
  - if resource management regime is such that resource rent from rebuilt fisheries will just leak away, then our resource investment game may not be worth the candle
    - resource investment program could, in fact, be dangerously undermined

Ensuring Generation of Resource Rent

- First step, ensure that our fisheries will bring forth sustainable resource rent.
  - ***The Sunken Billions –*** collectively, world capture fishery resources yielding resource rent not greater than ***zero!*** – the non-performing natural capital assets.
- Rent destroying "common pool" fisher incentives
  - fishers given incentive to discount massively future returns from fishery -lead to resource overexploitation and/or excess capacity
  - rent destroying incentives problem seriously aggravated by subsidies
- Consider now intra-EEZ incentive structures
  - Incentive Blocking vs. Incentive Adjusting approaches to management

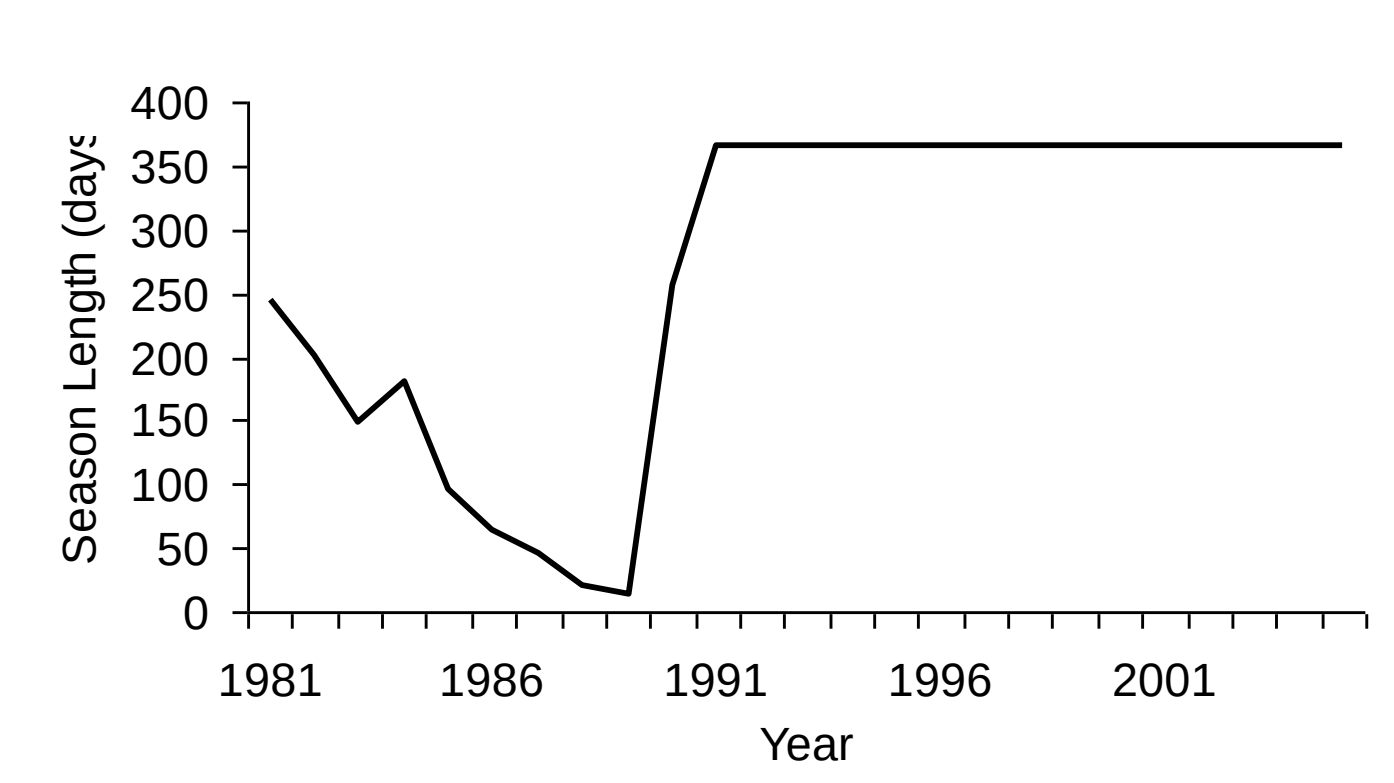
Getting the Intra-EEZ Incentive Structure Right: An Example

- The example of B.C. groundfish fisheries, where resource overexploitation not an issue
    - experience by no means unique
- Incentive Blocking approach – limited entry plus Olympics style TACs
  - case of sablefish – rent obliterating competitive fisher game – season length< 5% of maximum, indicating massive excess capacity; resource rent < 0 –sablefish resource a non-performing capital asset (a marine sub-prime mortgage)
    - other B.C. groundfish fisheries matched sablefish experience

Move to Incentive Adjusting Approach

- Fisheries and Oceans Canada moved to incentive adjusting approach - IQs, later ITQs, in sablefish, and other B.C. groundfish fisheries – ITQ schemes now integrated
  - competitive sablefish fisher game turned into cooperative game, with almost immediate benefits – e.g. season length – B.C. sablefish now a performing asset
- Could achieve same results with other forms of LAPPs ,e.g. TURFs, fisher coops.
    - possibility of use of taxes?
- The lessons

B.C. Sablefish Fishery Season Length: 1981-2005



Incentives for Resource Rebuilding

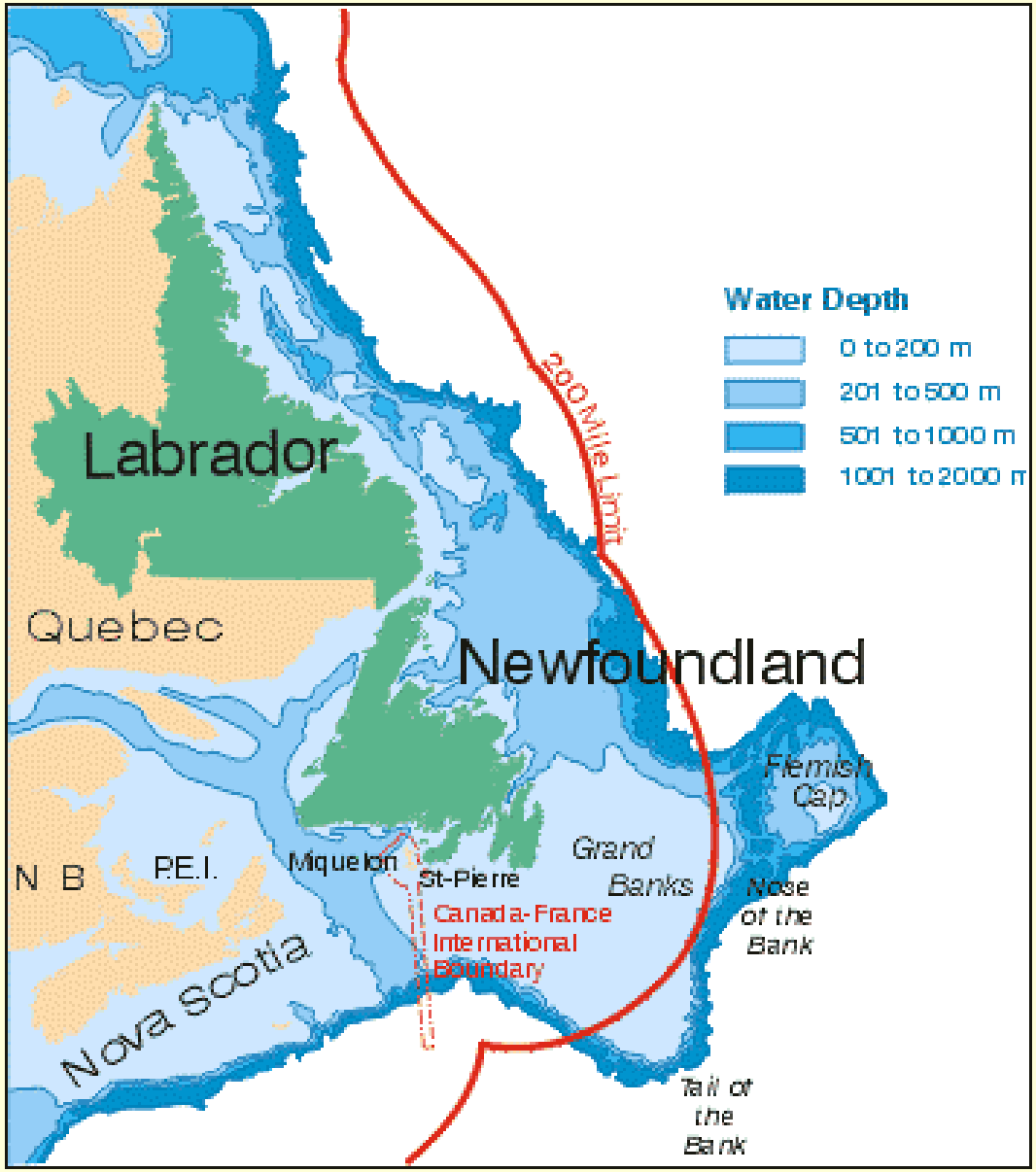
- Suppose that we have correct incentives for rent generation, what further incentives do we need for resource rebuilding?
- Key preliminary question – who is to incur the cost of resource investment – the state; the industry?
  - if the latter, then we know that , at a minimum, fishers must assured of share of payoff, and given no reason to discount that share heavily –an unsettled issue
  - possible case studies – Icelandic cod and Namibian hake –both fisheries generating rent, but both resources well below optimal level -due to past overexploitation.

International Considerations

- Shared fish stock issue arising from EEZ regime – account for up to 1/3 of global capture fishery harvests
- Key - strategic interaction among states (entities) fishing the resource.
  - economics of management of such resources forced to use game theory (theory of strategic interaction)-
  - economics of non-cooperative management simple – negative resource investment – famous “Prisoner’s Dilemma”

Cooperative Management

- The problem is to create right state incentives to ensure stable cooperative management regimes ***through time***
    - regimes often fragile
- Problem greatest – high seas stocks –RFMOs
  - large number of players
  - question of “real interest”
  - the new member problem
  - unregulated fishing
- The overarching issue of “resilience” of cooperative management regimes through time –impact of unpredictable shocks – economic, political, environmental


Water Depth
0 to 200 m
201 to 500 m
501 to 1000 m
1001 to 2000 m
200 Mile Limit
Labrador
Quebec
Newfoundland
Flemish Cap
Grand Banks
Nose of the Bank
Tail of the Bank
N B
P.E.I.
Miquelon
St-Pierre
Canada-France International Boundary
Nova Scotia

Two Contrasting Cases

- Paper has two contrasting cases: Norwegian Spring Spawning Herring [NSSH] (about which we shall hear much more tomorrow) ,and Northeast Atlantic/Mediterranean bluefin tuna
- NSSH –spectacular success in resource investment,
  - but coop management regime did not pass "resiliency" test
- NE Atlantic bluefin tuna –effectively non-cooperative management – outlook grim – ongoing negative resource investment.

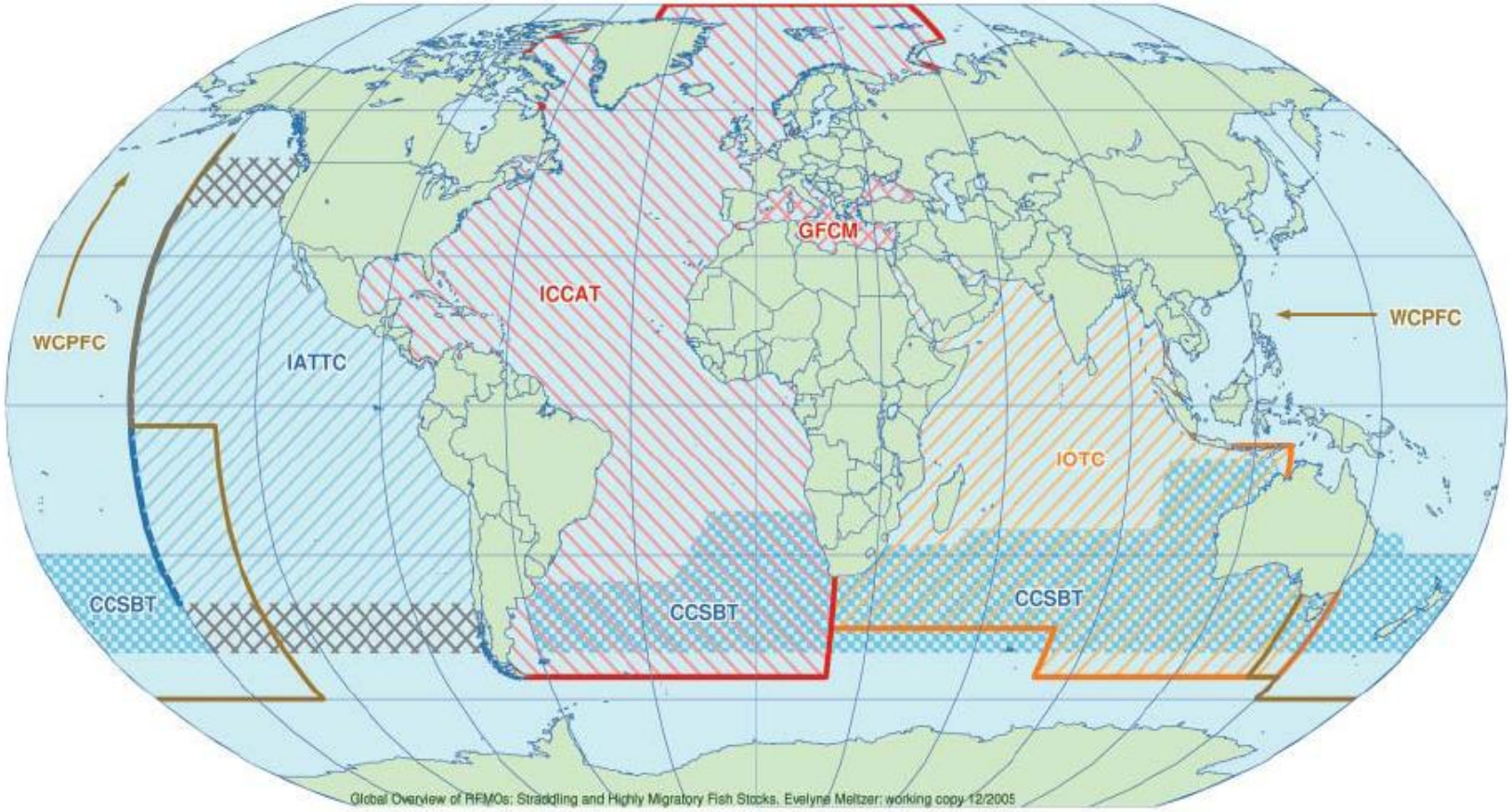
Links between Intra-EEZ and International Incentive Structures

- There are, of course, many links between two sets of incentive structures
- Consider, for example, a simple non-high seas shared fish stock (transboundary) in which intra-EEZ management is weak – little incentive for cooperative management
- Suppose, on other hand, that states are trying to establish good intra-EEZ management, but are unable to cooperate
  - easy to show that non-cooperation will undermine attempts at effective intra-EEZ management

Some Conclusions

- Rebuilding of fisheries to be seen as an investment program – there is no such thing as a costless investment
- Investment costs may not be willingly borne, unless correct incentives in place at both intra-EEZ and international level.
- At a minimum, must be incentives leading to sustainable rent generation within individual fisheries, and leading to cooperative management of shared stocks.
- Many incentive issues as yet unresolved.


Thank you for your attention



Global Overview of RFMOs:

Highly Migratory Fish Stocks (Tuna and Tuna-Like)

IATTC

Antigua Convention (not yet in force)

GFCM

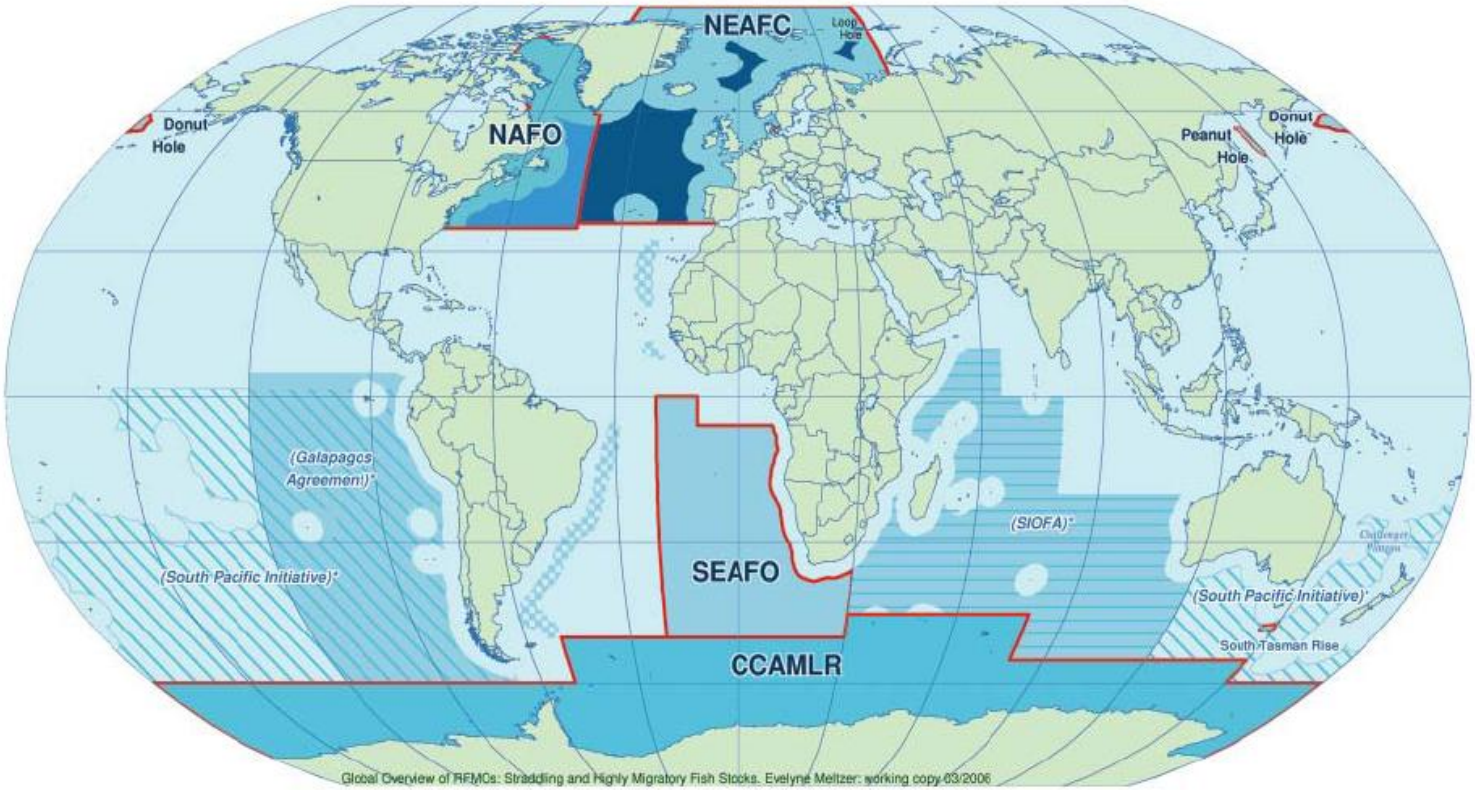
CCSBT

ICCAT

IOTC

WCPFC

WCPFC Note : Northern boundary and most of Western boundary for RFMO are not defined, and Area is not intended to include waters in South-East Asia which are not part of the Pacific Ocean; nor is it intended to include waters of the South China Sea.



Global Overview of RFMOs:
Straddling Fish Stocks

RFMO Boundary

( )* RFMO area under negotiation, not yet adopted or not yet in force.

- SEAFO
- CCAMLR
- NEAFC Convention Area
- NEAFC Regulatory Area
- NAFO Convention Area
- NAFO Regulatory Area
- Donut Hole Arrangement
- *(SIOFA)* (Not yet adopted)*
- *(Galapagos Agreement)* (Not yet in force)*
- *(South Pacific Initiative)* (Under negotiation - preliminary boundary)*
- Other Unregulated High Seas Areas where Straddling Fish Stocks occur