

Predicting quota allocation and uptake in output-managed fisheries: a bio-economic analysis (PREQUOTE)

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Summary of the research proposal: In recent years, the push towards Ecosystem-Based Fisheries Management (EBFM) has led fisheries management to evolve towards more comprehensive catch-based systems, aimed at taking into account the entirety of fishing impacts on marine biodiversity, including targeted and non-targeted species. Recent studies of the operation of such regimes have shown that such expansion raises a number of key questions as to the ways in which catch quotas are likely to be allocated and used by fishers, depending on the governance regime and production characteristics of the fishery under consideration, with ensuing consequences for management effectiveness.

In Individual Tradeable Quota (ITQ) systems, quota markets for jointly harvested species may not simultaneously clear. As a consequence, the equilibrium lease price of quota for a binding species is expected to measure the shadow value of their associated catch, while zero prices are expected for quota of non-binding species. Empirical observations however show that observed quota prices often do not match these predictions, prices paid for binding (respectively non-binding) species being lower (respectively higher) than expected from theory. Factors preventing quota prices from fully expressing the implicit value of limiting quotas remain poorly understood. Previous studies have pointed to a range of possible explanatory factors, including transaction costs due to imperfect and asymmetric information, social drivers, the role of barter or basket trades in multispecies systems, or formal and informal regulatory constraints.

Perfectly competing ITQ markets have also recently been shown to produce economic incentives to redirect fishing effort towards non-binding quota species, as well as species not under quota regulation, especially if fishers can easily target the latter. Such “spillover effects” may have important consequences for the ecological, economic and social performance of the fishery to which the quota management regime applies, as well as for the sustainability of the broader fishery system to which it belongs.

In addition to these drivers at the level of individual operators, the role of fishers cooperatives or producer

organizations has also been identified as key to understanding the operation of catch share systems. Indeed, these organizations can play a key role in determining quota allocations, and in balancing catch and quota, for example by developing the coordination required to resolve externalities related to the temporal and spatial deployment of fishing activities, or by reducing monitoring costs and improving compliance with catch limitations.

Predicting the allocation and uptake of quota in catch-based fisheries management systems requires an improved understanding of the respective roles of these different drivers.

The aim of the doctoral research will be to carry out an in-depth economic analysis of the operation of selected catch share systems to identify the main drivers of quota allocation and uptake. The analysis will rely on existing data available to characterize quota allocation systems and ensuing quota uptake, as well as new data which can be collected via surveys. The results of this analysis will be then be used to inform the further development of existing bio-economic assessment approaches supporting fisheries management in France and Australia, and assess the likely consequences of alternative management strategies, from an EBFM perspective taking into account ecological, economic and social dimensions.

Supervision: The doctoral research will be carried out as an international co-tutelle PhD, between the University of Brest and the University of Tasmania (UTAS), under the co-supervision of Olivier Thébaud (Ifremer, France), Caleb Gardner (University of Tasmania, Australia), Claire Macher (Ifremer, France) and Rich Little (CSIRO, Australia). Building on well-established collaboration relationships between the partner organisations, it will be supported by the ISblue graduate school in France and the region of Brittany. Co-funding by the Doctoral Program in Quantitative Marine Sciences - QMS of the University of Tasmania and by CSIRO will also be requested. This will provide the successful candidate with very favourable conditions for undertaking fieldwork, collaborating with supervisors in France and Australia as well as with other researchers internationally, and attending scientific conferences.