Measuring the Economic Performance of Australian Fisheries Management

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Abstract

Australia recently introduced a revised ‘economic’ objective to its *Fisheries Management Act* that has given greater focus to the economic performance of Australian fisheries management. Specifically, the objective requires the Australian Fisheries Management Authority (AFMA) to pursue maximising net economic returns to the Australian community from Commonwealth fishery resources when making fishery management decisions. The technical challenge is how to measure AFMA’s performance in pursuing this objective. Separation of all other factors that influence fishing industry returns from decisions made by AFMA is the first step. Alternative economic analyses to achieving this are considered. The policy challenge is to gain industry acceptance that AFMA has a role in managing for both biological and economic sustainability that can benefit the industry and the Australian public. The role and views of AFMA, its Management Advisory Committees (MACs), Resource Assessment Groups (RAGs) and industry associations in this process are explored. Two fisheries are discussed as examples of applying fishery economic performance measures, the Northern Prawn Fishery and the Albacore Fishery adjacent to the east coast of Australia.

Introduction

In 2005 AFMA’s economic objective was changed by government from ‘maximising the economic efficiency of Australian fisheries’ to ‘maximising the net economic returns to the Australian community from the management of Australian fisheries’. At the time government stated that the new objective was simply a clarification of the old objective. However, closer reading of it suggests much greater scrutiny on AFMA and its decision making, particularly how its decisions are contributing to the economic performance of Australian fisheries.

Since mid 2006 AFMA has commenced a process of learning and development to understand and implement the new economic objective in partnership with its stakeholders and consistent with ABARE’s performance reporting on Commonwealth fisheries. This paper provides a short of history, progress to date and what the next steps are in 2007.

Commonwealth fisheries economics in context

In the mid 1990s several court cases were heard that brought into focus AFMA’s economic efficiency objective defining it as applying at a fishery scale (and not an
individual fisher), being one of a number of objectives that must be pursued in tandem and in some instances being the most important (see Bannister Quest Pty Ltd v AFMA, 1997 & PW Adams v AFMA, 1996). Following this initial focus the objective faded from the fisheries management arena for almost a decade.

Its re-emergence was brought about through the development and release the first Ministerial Direction to AFMA in December 2005. This is a statutory instrument under s.91 of the Fisheries Administration Act 1991. The Direction set out the risks government was willing to take in the utilization of Commonwealth fisheries resources, thus filling a policy gap that had existed since AFMA’s inception. It also placed maximum economic yield (MEY) firmly on the map as a target reference point for Commonwealth fish stocks. The Direction’s release occurred only a few weeks after the new economic objective was announced by government.

Economic objectives and expectations
The government, in releasing the new economic objective, stated that AFMA must:
- produce the greatest individual and thus fishery-wide net economic returns through effective fishery management
- use total allowable catches (TACs) and individual transferable quotas (ITQs) as the primary management tool
- provide on-going benefits from the $220M industry restructure through its management decisions
- prevent overfishing and recover overfished stocks
- pursue sustainable and profitable fisheries.

The economic objective combined with these statements placed a clear need for AFMA to measure the impacts of its decisions on the economic performance of fisheries. This is distinguishable from the general economic performance of a fishery which is primarily driven by external forces, such as diesel and seafood commodity prices.

So far the industry has had little involvement in the above debate, however this will change in 2007 as AFMA tests its preferred approach to measuring its economic performance in a number of fisheries. It is unclear at present how industry will react but historically it has regarded fishery economics as largely its business. Most in industry have simply assumed based on government advice that the old and new objectives are essentially the same and therefore no additional action by AFMA is required.

Options for measuring economic performance
AFMA worked closely with ANU and ABARE in considering what options would best suit its fisheries with the criteria being: a single approach applied to all fisheries and one that satisfies both AFMA and ABARE requirements. Three options were short listed for consideration; MEY, profit decomposition and productivity indices. These options were then looked at in terms of balancing need and cost, particularly regarding data.

Following consideration of the above the AFMA Board has decided to proceed with a trial in five fisheries to undertake profit decomposition during 2007.
Institutional issues
AFMA consults with industry primarily through its management advisory committees (MACs) and resource assessment groups (RAGs), which are the advisory bodies that provide advice to the AFMA Board. The Board in turn is able to, subject to its guiding legislation, make decisions on almost all fisheries management matters without reference to the Minister or other arms of government.

A key matter facing AFMA was a lack of economic capacity and training. Previous experience with MACs and RAGs in the area of stock assessment demonstrated that AFMA staff and industry participants require some base level understanding of the science in order interpret and make informed recommendations to the AFMA Board. Therefore in order to implement economic performance reporting through the MACs and RAGs AFMA staff and industry participants need to be conversant with economic principles.

To address this need, AFMA formed a fisheries economics working group of about 10 staff to learn about fisheries economics and measuring economic performance which was facilitated by the ANU. This process is being followed by an economics workshop to bring in other economists, relevant agencies and industry principals. However, it is clear that a more enduring program is required to embed fisheries economics in the fisheries management decision making process. This could parallel the process funded for stock assessment in the 1990’s by the FRDC.

AFMA faces a real challenge in gaining the understanding and support of MACs and RAGs for economic performance reporting, but this is necessary to meet government reporting requirements and pursuing the objectives of the Act. This process will commence in the second quarter of 2007 in conjunction with planned MAC and RAG meetings. ANU economists who developed the profit decomposition approach will facilitate these discussions.

Current use of MEY in AFMA fisheries
Up until 2006 only one fishery, the Northern Prawn Fishery (NPF), had a specific economic objective - managing the prawn harvest at MEY. Tiger and endeavour prawns have had a MEY target calculated.

The NPF is an input controlled fishery with fishing effort measured by head-rope length. As with many input controlled fisheries there is periodic reduction in head-rope length to deal with effort creep (estimated at 3-5% pa). Historically the NPF has made sufficient profits to self-fund adjustment. More recently (2003-2006), with low prawn prices due to import competition (prawns produced by aquaculture in Asia) and high fuel prices, there is little or no profit being made by the industry. In 2006 the government agreed to buy out a proportion of NPF fishing concessions (vessel and gear) in return for industry agreeing to move to TAC/ITQ management. The buyout was completed in February 2007 (reducing the fleet from 95 to 52 boats) and the NPF will move to TAC/ITQ’s by 2010. The government’s expectation is that by aligning fishing capacity with that
required to achieve MEY and implementing an output control system the fishery is best placed to self adjust (through the quota market) and make profits in the future. However, despite having agreed to move to TAC/ITQ management and accepting about $50M in buy-back funds, many industry members doubt the use of output based management making implementation challenging for managers.

Notwithstanding the above a bio-economic model based around MEY has been constructed and applied to the NPF. This provides forward projections for up to five years. The biggest issue facing the fishery is that current stock size (for tiger prawns – the primary species) is less than MSY and MEY is 1.5 x MSY. It may be that any TAC is considerably less than current catch levels under the effort control system.

A second fishery, the Southern and Eastern Scalefish and Shark Fishery (SESSF), had MEY analyses applied to several key species in mid 2006. These were flathead, pink ling, spotted (silver) warehou, orange roughy and blue grenadier. For each species MEY was greater than MSY, although this varied between 1.03 for flathead and 1.47 for Cascade Plateau orange roughy. This gave further weight to the claim that no matter what the species MEY was at least as conservative, if not more so, than MSY. The relationship between MSY and MEY is considered further in the harvest strategy section (below).

A third application of MEY was to the newly developing albacore stock adjacent to Queensland. Until 2005 albacore had been a bycatch of target fishing for yellowfin and big-eye tuna in the Eastern Tuna and Billfish Fishery (ETBF), and effort controlled fishery. During 2005 several vessels switched to deep setting with longlines for albacore and by 2006 12-15 were doing so. Profits were being generated through improved international prices for frozen and fresh albacore, and the byproduct of high quality big-eye and yellow fin. In 2006, AFMA faced a situation where up to 60 vessels could fish in the albacore fishery with no limit on catch. Rather than just apply a TAC to ensure sustainability AFMA wanted to maximize the profits from the albacore fleet for the longer term. This meant maintaining catch rates and sizes classes at profitable levels.

A MEY model was constructed for the fishery in the latter half of 2006 and showed that a TAC of around 3,200 tonnes and up to 15 vessels was the best mix to achieve MEY. AFMA has now implemented the TAC and is working with Eastern Tuna MAC on the best means of matching fleet capacity to MEY.

The Ministerial Direction and Economic Performance
As noted above, in December 2005 AFMA was given a statutory Direction from the Minister for Fisheries and Conservation which focused on ending overfishing and recovering overfished stocks. It also required AFMA to apply an interim harvest strategy policy (HSP) based around MEY. The interim HSP expressed the risk the government was willing to take in the utilization of publicly owned fisheries in waters where Commonwealth law applied. This was a major step forward for AFMA and industry as it placed boundaries around decisions on catch levels in particular which had previously
been absent. The draft final HSP will be released for public comment in March 2007 and implemented by 1 January 2008.

AFMA is aware that for many fish stocks or fisheries estimating MEY may be too expensive (due to data needs and interpretation skills) given the small size of several fisheries. Because of this the draft HSP provides for proxies for MEY (1.2xMSY) and MSY. In order to ensure the same level of risk is being taken with a fish-stock across varying levels of uncertainty ‘tiers’ were established from fully quantitative assessments (Tier 1) to fully qualitative ones (Tier 4). The lower the tier a fish stock is in the more conservative the management to maintain the same level of risk.

**Conclusion**

Changes to AFMA’s economic objective, the Ministerial Direction and the Australian government’s structural adjustment package in late 2005 have placed greater focus on AFMA’s economic objective, the Authority’s performance and its decision making. The economic performance of Commonwealth fisheries is being monitored by ABARE and it is important that AFMA and ABARE agree on what tools will be used in future. Further, distinguishing the economic impact of AFMA’s decision making from all the other factors that influence vessel and fleet profitability is needed. One approach is to use profit decomposition and this will be trialed in 2007 to see if it is the best means of doing so across five of AFMA’s fisheries. If successful, in the last quarter of 2007 the AFMA Board will consider its implementation as general economic reporting tool for AFMA.