Journal of Agricultural and Applied Economics, 36,2(August 2004):347–349

Buyback Programs for Overcapitalized Fisheries: Approaches, Experiences, and Impacts for Southeast Fisheries: Discussion

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Both of the papers presented in this session deal with various aspects of buyback programs for fisheries. Each paper highlights the need to rationalize capacity output in fisheries in which property rights are poorly specified. However, neither paper places buyback programs into a consistent framework in which the distinction between capacity reduction and capacity utilization is clearly recognized. This distinction is important in order to elicit the most appropriate policy response (particularly with respect to buybacks) to degraded fishery resources.

In the economics literature, the terms "excess capacity" and "overcapacity" are used interchangeably, but a distinction is needed for fisheries in which management relies on input controls to meet conservation objectives instead of transferable rights-based (i.e., market-based) solutions. This is most easily seen when attempting to manage fish stocks that are in degraded condition, that is, in which the rate of removal exceeds the rate of replacement. What is the appropriate management strategy for fishery resources in this condition? Should vessels be removed (bought out), should regulations be implemented to reduce capacity utilization, or would some combination of the two approaches make the most sense? The answers cannot be determined by simply comparing the current resource condition to capacity output of the fishing fleet. What is needed is an understanding of the capacity output of the fishing fleet and the desired output from the fully rebuilt fish stocks.

Suppose capacity output does not exceed desired long-term output. In this case, the appropriate management strategy would be to reduce capacity utilization in the short term to allow stocks to recover, but a fleet reduction or buyout program is not needed. On the other hand, suppose fishing fleet capacity output exceeds the desired long-term output. A program to reduce capacity utilization would still be necessary, but a vessel buyback might also be warranted. Although there is no formal theoretical basis for doing so, it is convenient to define the former situation as one of excess capacity and the latter as indicative of overcapacity. In this manner, the definitions are linked to specific policy responses; a fishery with excess capacity (capacity output does not exceed a long-term target) would not signal the need for a buyout, whereas a fishery with overcapacity (capacity output exceeds a long-term target) would. Distinguishing between excess and overcapacity also provides decision makers with a stopping rule. That is, a buyout would only remove as many vessels as necessary to remove overcapacity.

The Larkin et al. paper provides an overview of the required components of a possible vessel buyback program for the U.S. Atlantic Shark Fishery, whereas the Kirkley et al. paper demonstrates the implications of different buyout objectives in the black sea bass trap fishery.

Larkin et al. provide a comprehensive ex-

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amination of the practical considerations involved with vessel buyback program design. The paper thoroughly reviews domestic and international buyback programs that have been conducted to date. The strengths and weaknesses of these programs and their implications for a potential buyback initiative in the shark fishery are thoughtfully evaluated. However, the paper does not consider the context for capacity reduction outlined above, and would benefit from a broader consideration of the relative merits of buybacks versus other capacity management alternatives.

Larkin et al. indicate that the shark fishery may not generate sufficient income to make a vessel buyback financially viable. If this is the case, then alternative forms of capacity management need to be considered. Some of these options are mentioned in the paper but are quickly dismissed. Given the strong indication that a vessel buyout in the shark fishery may be problematic, the authors are encouraged to reconsider other capacity management alternatives.

The shark case is illustrative of a fishery management response to a short-term resource problem. The tendency is typically to conclude that a buyback is needed without considering longer-term objectives. In this specific example, the question of whether the shark fishery has excess capacity or overcapacity has not been addressed. Although it is probable that overcapacity does exist in the fishery, the question of how much capacity to remove needs to be answered. Admittedly, considerations of this nature are beyond the scope of the Larkin et al. paper, but in making policy recommendations the authors will eventually need to consider capacity reduction relative to long-term capacity objectives.

The paper by Kirkley et al. provides an example of the types of analyses that are needed in designing a buyout program. The authors provide an estimate of capacity output and develop the means to assess different long-term capacity management objectives. Data envelopment analysis is used to derive an estimate of capacity output for vessels engaged in the South Atlantic black sea bass trap fishery. This state of the art procedure allows consideration of a variety of management possibilities. The authors examine three different capacity management objectives: (1) maximum technical efficiency; (2) maximum capacity utilization; and (3) maximum fleet size needed to harvest a predetermined total catch. The paper is really the first in the fisheries literature to demonstrate the importance of linking capacity management objectives with potential buyouts.

The only major concern with the Kirkley et al. paper is the inclusion of traps as a fixed factor in the production function; this complicates the interpretation of the results in terms of the fleet size that would be consistent with desired long-term capacity output. This concern applies to all fisheries that use fixed or stationary gear (traps, gillnets, and long-line). Vessels that fish with trawl gear generally use one net at a time. As such, there is a one-to-one correspondence between the amount of gear used and the number of vessels. This relationship does not change whether capacity output is measured on a trip or an annual basis; hence, gear can be ignored in the production function.

In fixed-gear fisheries, the amount of gear in the water can be changed at any time and can vary considerably across vessels. Quantity of gear is, therefore, an important consideration in the production function. In the black sea bass trap analysis, gear is treated as a fixed factor, because the data were retrieved at the trip level. As such, Kirkley et al. assume that the amount of gear on a trip is fixed by "customary and usual operating procedures." However, the authors note that vessel operators can and do make numerous adjustments in numbers of traps fished and in fishing time. These changes will alter estimates of capacity output, and, given a target catch, would also change the fleet size appropriate for any given management objective

Kirkley et al. used the black sea bass fishery to illustrate the importance of considering long-term capacity management objectives in buyout program design. If, however, a buyout were actually being contemplated for this fishery (or any other fixed-gear fishery), then treatment of gear as a variable input would be

appropriate, provided adequate data were available.

Readers interested in fisheries will find that the two papers provide a comprehensive treatment of the myriad considerations involved in buyout program design. These papers are pertinent to fisheries managed by effort controls, as market-based approaches would rationalize capacity without direct intervention through a buyout. The papers should be read in reverse of the order in which they appear in this issue of the *Journal*, because they reflect two necessary stages in an overall capacity management program. The first stage, represented by the Kirkley et al. paper, involves an assessment of capacity to determine whether a buyout is needed relative to long-term capacity output and resource conditions. The paper emphasizes the importance of considering different capacity management objectives, because these will affect the number of vessels that would be targeted for a buyout. If overcapacity is found to exist, the issues described by Larkin et al. covering buyout implementation need to be considered prior to implementing a buyout program.