

## **Is the Fisheries Production Function Institution-dependent? Implications for Targeting Ability in Multispecies Fisheries**

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### **Abstract**

Multispecies fisheries add additional complexity for rights-based management implementation. Imperfectly selective fishing gear may make it difficult for fishermen to match their catch composition with the portfolio of total allowable catches chosen by management. If fishermen can perfectly target their catch, the problem of matching catches with quota allocations declines in importance. Previous ex ante examinations of targeting ability suggest that rights-based systems may face serious challenges due to weak substitution potential between species. In contrast, ex post evidence from multispecies ITQ fisheries suggests that far greater flexibility in outputs is possible than previously thought. These disparate findings suggest that the production technology revealed through empirical work may be heavily dependent on current management policies. We examine this possibility through an analysis of a fishery undergoing the transition to rights-based management: the Bering Sea/Aleutian Island groundfish fishery. We possess an unusually detailed panel dataset of vessels from before and after rationalization, obtained by onboard observers who record the deployment and retrieval location and times for each trawl, as well as the total catch, tow depth, and catch composition. Using primal multi-input, multi-output frontier methods, we estimate the elasticities of transformation between the catch of different species and compare our estimates before and after the policy change. We then control for a number of changes in the nature of fishing behavior to uncover the degree to which observed changes in substitutability are the product of incentive driven changes in these observable behaviors.