

Economic Research on Fisheries Policy, Fisheries Management, and Seafood Markets

Yutaro Sakai (Graduate School of Agricultural and Life Sciences, The University of Tokyo)

a-sakai@g.ecc.u-tokyo.ac.jp

In recent years, public awareness of the importance of causal inference has increased. The central idea is that (randomized) experiments in the natural sciences are the most useful tool for identifying causal relationships, and that causal inference should be made by creating or finding situations that are as close as possible to those experiments. The emergence of this approach has been called the credibility revolution and has contributed significantly to evidence-based policy formulation.

a) There is an ongoing debate that fishery subsidies should be reduced or banned, but in fact there is a lack of reliable evidence on the causal relationship between fishery subsidies and declines in fishery resources. To study this issue, I first constructed panel data on subsidies and stock indices at the national level. However, since subsidies are not disbursed randomly, simply looking at the relationship between subsidies and resources does not reveal a causal relationship. Therefore, we focused on the fact that it takes time for subsidies to affect resources. By combining this with a method called fixed effects modeling, we extracted the portion of the subsidy that could be viewed as random and analyzed its causal effect on the resource. This revealed that the effects of subsidies depend on the type of subsidy and the quality of fishery management.

b) The offshore purse seine fishery in the Muroran district of Hokkaido has had a unique fishery management system called the pooled system since 1996. Under this management, all fishing vessels operate cooperatively, and a certain percentage of the landings, minus a certain amount of expenses, is distributed among them. Such management systems are common in Japan, but until now there has been little reliable knowledge of their effectiveness. The main conventional evaluation method is a comparison between before and after the introduction of the system, but this method cannot distinguish between factors that occurred at the same time other than the introduction of the system (e.g., fluctuations in fish prices). Therefore, we conducted an analysis using one of the methods of natural experiments called the difference-in-differences method. The results revealed that the causal effect of the introduction of the pooled system was a 25% increase in fish prices and productivity.

4. Reference

- Sakai, Y. (2017). Subsidies, fisheries management, and stock depletion. *Land Economics*, 93(1), 165-178.
- Sakai, Y., Ishihara, H., & Ishino, M. (2022). Sharing in the commons: Evaluating the pooling system in a Danish seine fishery in Japan. *Marine Policy*, 139, 105017.