Evaluating the competitiveness of Japanese fishery applying efficiency indicators: taking the Pacific saury stick-held dip net fishery as an example

［課程博士・論文博士共通］

博士学位論文内容要旨
Abstract

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論文題目 Title	Evaluating the competitiveness of Japanese fishery applying efficiency indicators: taking the Pacific saury stick-held dip net fishery as an example （効率性指標を用いた日本漁業の競争力分析―サンマ棒受網漁業を事例として―）		

With the demand for seafood keeping increasing since the Second World War, the global fishery developed rapidly since then. The fishery production of Japan reached the peak in 1980s and became one of the largest seafood-exporting countries. Contrary to the declining domestic supplies of fishery products, the import of seafood has kept expanding since 1960s. According to the annual Food Balance Sheet published by the Ministry of Agriculture, Forestry and Fishery in Japan (MAFF), the ratio of imported seafood quantity to Japan's total demand was less than 2% in 1960 while rose to around 52% in 2013 (MAFF). In other words, Japan is facing a fierce competition with foreign countries in its domestic seafood market. Under this background, enhancing the competitiveness of Japanese fishery has become one of the focuses in national fisheries policies. As the concrete approaches to enhance competitiveness of Japanese fishery, various opinions are raised in academic field. Not only the controversy appears in the academic field, the explicit policy has not yet been formulated by Japanese government. Before the controversy comes to an end, it may be necessary to clarify the extent of competitiveness in current Japanese fishery through empirical studies.

Although the word 'competiveness' is still an ambiguous concept, efficiency has been applied as indicators to evaluate competitiveness. Previous studies prove that efficiency analysis will be helpful in clarifying the competitiveness of Japanese fishery. In terms of the methodologies, stochastic frontier analysis (SFA) and data envelopment analysis (DEA) are widely used to evaluate the efficiency of a decision-making unit. In this thesis, efficiency analyses of the Japanese marine fishery and Pacific saury fishery in Habomai were carried out to examine the efficiency condition from both a macro and a micro view point.

Important results of the efficiency score of Japanese marine fishery production in 2013 were as follows: 1) tonnage of powered vessels and fishers quantity are positively related with Japanese marine fishery production value; 2) there still exists a range of 22% to 44% scope to improve the marine fishery production value theoretically, without adding more inputs; 3) in terms of the single prefectural government, Ehime prefecture showed the highest TE whatever estimation method was applied, while Osaka was the least efficient by use of SFA and DEA-CRS, and Yamaguchi displayed the lowest TE by means of DEA-VRS; 4) there may exist

inconsistency between large production value of one prefectural government and high technical efficiency.

Significant results of the TE study on the Pacific saury stick-held dip net fishery in Habomari region, Hokkaido prefecture using SFA approach are summarized as follows: 1) vessel tonnage, monthly fishing days, monthly crew size and stock abundance are essential and positive determinants of the sampled fishing vessels; 2) saury production can be averagely increased by 30% without adding more inputs if fishing vessels can operate fully efficiently; 3) vessel ownership of skipper, specialization in saury fishery, large vessel tonnage are estimated to be several factors positively affecting technical efficiency. Results of the efficiency study on the Pacific saury stick-held dip net fishery in Habomai region, Hokkaido prefecture using DEA approach in Chapter 6 were as follows: 1) vessels showed the highest TE do not guarantee high AE and CE; 2) the sampled fishing vessels can improve their TE as well as CE to a considerable extent; 3) vessel tonnage and behavioral motivation of vessel owner or skipper showed positive influence on TE as well as CE.

Results of this thesis are expected to provide some policy implications. Firstly, efficiency analysis can be applied to evaluate the competitiveness of fishery. Secondly, with regard to the Pacific saury SHDN fishery in Japan, vessel ownership, specialization and larger vessels may be positively related to a higher TE and CE, which can be considered in further research or policies formulation aiming at improving the efficiency or competitiveness of this specific fishery. In particular, the importance of incentives in crew members' behaviors have been shown, which is the common characteristic of vessel ownership and specialization. Meanwhile, it should be cautious to conclude that large vessels are superior to small vessels. Finding a balance between competitiveness improvement and social stability would be desirable.