

## **What Kinds of Japanese Strategies are Pareto Improving: the case of Skipjack Tuna fisheries in the Pacific Ocean**

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### **Abstract**

In the Pacific Ocean, the total catch of skipjack tuna has been increasing rapidly. Then, eight of Polynesian, Melanesian, and Micronesian countries (PNA countries) have concluded a cooperative management of tuna fisheries. Although those countries do not catch a large amount by themselves, the main migrating area is included in the EEZ of those countries. Therefore, they can behave as a monopolist who sells fisheries rights to fishing countries. Different from other fishing countries, Japan has a specific feature: it catches skipjack tuna both in the EEZ of PNA countries and its own EEZ by using different fishing gears. Moreover, the stock in the EEZ of Japan depends on that of PNA countries, because small groups of one-year-old skipjacks leave the EEZ of PNA countries and go to the North. We apply the Non-cooperative Game Theory to this fisheries management. If there were no “small groups”, the amount of quotas sold to fishing countries would be insufficient in terms of total welfare of fishing and resource countries. However, the amount of catch may be excessive in the presence of the, “small groups.” Therefore, we examine the strategies for Japan to improve both Japan, welfare and total welfare, such as unilateral vessel reduction, compensation schemes to other fishing countries, and contribution to the establishment of the surveillance system. We also examine negotiation/transaction rules of fishing rights, and the area of EEZ.