Title: Efficiency of Individual Transferable Quotas (ITQs) when Fishers are able to Choose Vessel Sizes: An Experimental Approach [ǂ]

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Abstract

Marine resources have been seriously depleted in the past few decades, and some of them are in danger of exhaustion. According to the Food and Agriculture Organization of United Nations (FAO, 2008), as of 2006, more than 70 percent of marine stocks assessed are fully exploited or overexploited.

In response to this situation, governments and communities have adopted many kinds of policies and schemes on the fisheries management. Like other environmental and resource issues, the introduction of market mechanisms has been considered to be one of effective measures to tackle this problem, which is called Individual Transferable Quotas (**ITQ**s). Under this regime, the authority determines Total Allowable Catch (**TAC**) and the initial allocation of fishing rights/quotas. Fishers are able to transact those fishing rights/quotas in the quota market.

Employing an experimental approach, this paper examines whether the efficiency of fishery can be achieved under Individual Transferable Quotas (ITQs) regimes, when fishers can choose vessel sizes. In addition to the most common types of experiments for trading permits, we analyze the situation in which the subjects choose one from two types of vessels: a large-scale or a small-scale. The fixed cost for a large-scale is higher than that for a small-scale, whereas the variable cost for a large-scale is lower.

We find that (a) the average trading price converges to the theoretical equilibrium price given numbers of both types of vessels. We also find that (b) vessels are chosen rationally in the sense that, the greater is the average trading price minus the theoretical equilibrium price in the past periods, the less incentive subjects have to invest in large-scale vessels, and that (c) quota prices in the first period could influence not only the quota prices but also the numbers of both types of vessels in the ensuing periods. Moreover, (d) initial allocation could affect the rational choice of vessels by subjects/fishers.

Key Words: Individual Transferable Quotas, tradable permits, experiment, double auction.

JEL Classification: C91, Q22, Q28.

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