Aquaculture Economics & Management ›

Volume 22, 2018 - Issue 4

Original Articles

Analyzing the variations in cost-efficiency of marine cage lobster aquaculture in Vietnam: A two-stage bootstrap DEA approach

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Pages 458-473 | Published online: 23 Apr 2018

Cite this article https://doi.org/10.1080/13657305.2018.1429032

ABSTRACT

This study measures cost-efficiency and its determinants for 353 marine cage lobster farms in Vietnam using a two-stage bootstrap data envelopment analysis (DEA). In the first stage, the bootstrap DEA approach was used to obtain bias-corrected technical, allocative cost-efficiencies for the farms. Then, the bias-corrected cost-efficiency scores were regressed on a set of explanatory variables using a bootstrapped truncated regression. The results show that substantial cost-inefficiency occurs in lobster aquaculture due to the overuse of inputs, which, given the prevailing input prices, are also used in inappropriate ratios. Cost-efficiency is shown to be significantly impacted by the age of the farmer, total cage volume and by variables affecting the production environment such as the cage cleaning, distance to the nearest farms and the presence of other discharges into the marine environment.

KEYWORDS:

Bootstrap DEA | cost-efficiency | marine cage lobster aquaculture | truncated regression

Notes

Fish bycatch or trash fish used to feed lobster in Vietnam is low-valued fish such as snails, green mussel, clams, small swimming crabs, lizard fish, red big-eye, and so on.

Maintenance costs include the cost of repairs, maintenance to equipment and cages.

The information of interest has not been collected in this study because the lobster farmers considered it as a sensitive problem and were not ready to share. Therefore, this 5% for fixed costs does not include interest.

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