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AN ECONOMIC ANALYSIS OF THE PRODUCTION BEHAVIOUR OF FISHING FIRMS IN SELECTED FISHERIES OF MALAYSIA

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AN ECONOMIC ANALYSIS OF THE PRODUCTION BEHAVIOUR OF FISHING FIRMS IN SELECTED FISHERIES OF MALAYSIA

By

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Dedicated to the Loving Memory of
My Father

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LIST OF ABBREVIATIONS

GDP : Gross Domestic Product

NEP : New Economic Policy

SMP : Second Malaysia Plan

OPP : Outline Perspective Plan

FMP : Fifth Malaysia Plan

NAP : National Agricultural Policy

EEZ : Exclusive Economic Zone

GRT : Gross Registered Tonnage

CPUE : Catch Per Unit of Effort

FMB : Fish Marketing Board

FAMA : Federal Agricultural Marketing Authority

PLI : Poverty Level Income

MSY : Maximum Sustainable Yield

MEY : Maximum Economic Yield

OAE : Open Access Equilibrium

C-D : Cobb-Douglas Function

CES : Constant Elasticity of Substitution Function

LKIM : Lembaga Kemajuan Ikan Malaysia

DOF : Department of Fishery

MOA : Ministry of Agriculture

MOF : Ministry of Finance

MLE : Maximum Likelihood Estimate

SURE : Seemingly Unrelated Regression Equation

LRT : Likelihood Ratio Test

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An important problem in the fishing industry of Peninsular Malaysia is the existence of group rivalry and conflict between artisanal fishermen and trawlers resulting from the common property nature of fishery. This has led to overfishing in the inshore waters affecting both the catch and income of a large majority of artisanal fishermen. The present system of distributing marine earnings which favours boat owners further aggravates the problem of poverty among fishermen.

This study examines the distribution of marine earnings, costs and returns of the fishing operations for three gears namely, trawl, purse seine and gill net, and the structure of their respective harvesting technologies. The general objective is to study the production behaviour of the relevant fishing firms and the specific objectives include the study of supply

response to changes in fish prices, input demand response to changes in factor prices, and cross supply and demand responses to changes in output-input prices. The nature of the share systems in marine fishing and the extent of their variations across boats and locations is also examined. The study also attempts to determine whether the observed vessel sizes are in long-run equilibrium.

A multioutput restricted profit function with a translog specification was employed to study the production characteristics of the fishing firms. Cross sectional data collected from selected locations of the east and the west coast of Peninsular Malaysia were used.

The study on share systems shows that the 50:50 arrangement of distributing net profit between the boat owner and the crewmen with equal share of the running costs is the most dominant arrangement. The system, however, is biased in favour of owners at the expense of ordinary crew members. The average income of a boat owner is found to be 11 to 13 times higher than an ordinary crewman for purse seine , 4 to 5 times for trawler and 1.5 to 3 times for gill net.

Fishing is shown to be quite profitable. The rate of net profit to operating expenses is relatively high and consistent with the degree of riskiness associated with marine fishery.

Fishing operations are also shown to be viable both in the short and long run.

Results of multispecies profit function show that fishing firms do not act as profit maximizers. This behaviour is consistent with the resource use characteristics of a common property fishery. Input-output relationships are not separable for purse seiners and trawlers but separable for gill netters. Observed vessel sizes are not in long run equilibrium and optimum vessel sizes are higher than their observed sizes.

In general fishing firms are not supply responsive to fish prices. Demand for energy is inelastic while that of crew is elastic. Species of purse seine catch are both substitute and complementary suggesting that species targetting is uncertain. Trawler and gill net catch exhibits large scale complementarity among the species indicating that targeting of species is not at all possible.

The results of the present study justify a range of policy options. First, the share system of distributing marine earnings should be restructured in such a way that the crew's share of the net profit is increased in order to reduce income gap between boat owners and crewmen. Hence substantial improvement in the level of poverty among fishermen can be achieved without necessarily initiating costly rehabilitative

programmes. Secondly, worker-fishermen can be provided with boats on rental basis or funds for setting up partnerships or cooperatives so that income and cost are shared equally among the worker-fishermen without requiring to set aside a large share for boat and net. Thirdly, congestions may be minimized by withdrawing boats from inshore waters and pushing them beyond current areas of operation through expansion of vessel size so as to achieve substantial long-run economies of scale in fishing.