

Natural Resource Accounting for Sustainable Growth and Management in East Malaysia

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Introduction

Natural resources play an important role in the growth of the Sarawak and Sabah economies. The percentage contribution of natural resources to the Gross Domestic Products growth between 1978 and 1997 ranged from 41 to 62 percent for Sarawak and 46 to 66 percent for Sabah. In terms of contribution to the export values, the natural resources accounted for 69 to 92 percent and 67 to 91 percent respectively for Sarawak and Sabah between 1980 and 1997. Even though natural resources had contributed significantly to the economic growth of these states, their contributions had not been consistently treated in the national account calculations. More specifically, these economies continually exploit and even deplete these natural resources in order to achieve rapid rates of growth, yet measured income in the national accounts would not reflect the disappearance of these natural assets, raising the question of the sustainability of this rapid economic growth.

The main objective of this project is to attempt to determine the contribution of fisheries resources to the economic development and growth of Sarawak and Sabah. The specific objectives are:

To develop an accounting information system for the fisheries resources in Sarawak and Sabah.

To analyze and to provide measures of social and economic performance of fisheries resource use in Sarawak and Sabah.

To determine the current and optimal depreciation of the fisheries resources in Sarawak and Sabah over time.

Materials and Method

Of the several valuation methods being advocated or actually used to account for the depreciation of fisheries re-

sources, the net present value method is deemed appropriate for the fisheries resource depreciation valuation for Sarawak and Sabah (Crowards et al. 1996, Repetto et al. 1989, Landefeld et al. and Hines 1985). The long run sustainable rents from the fisheries were computed based on the effort and landings data (1979-94) from the respective state Annual Fisheries Statistics and supplemented by information from cross-sectional cost surveys. The optimal sustainable rents from the fisheries resources were computed following the model derived by Clark et al. and Munro (1975). The annual depreciations of the fisheries were computed as the negative difference between the *ad infinitum* amortization of the resource rents at the current and previous years exploitation rates. Similarly the optimal depreciations were computed as the negative difference between the *ad infinitum* amortization of the resource rents at the current and optimal exploitation rates.

The data required for the valuation were obtained from the Annual Fisheries Statistics published by the Department of Fisheries Sarawak and Sabah. Additional data unavailable from the published sources were collected from surveys conducted with the help and cooperation of DOF's staffs.

Results and Discussion

The main results of the study indicate that the Sarawak fisheries are experiencing negative rents in eight of the 16 years from 1979-1994. For Sabah fisheries, the results obtained do not show the same situation as in the Sarawak fisheries. Negative rents are restricted to three of the four species groups (demersal, pelagic and mollusks for Sabah. The negative rents appear to be more cyclical in nature except for the mollusks.

Fisheries resource depreciations (negative amortized resource rents between current and previous period) for Sarawak occur in nine years for pelagic and mixed species, eight years for demersal and six years for crustacean. For Sabah fisheries, depreciations occur in seven (for crustacean), eight (for demersal) and nine (for pelagic and mollusks).

The correlation coefficients between levels of fishing effort and depreciation over the accounting period for the Sabah and Sarawak fisheries are all negative implying that the level of fishing effort currently applied to these fisheries are too high. Reduction in the fishing effort would result in the fisheries resources in these states to appreciate in values.

The results show that optimal rent for crustacean is the highest while demersal (from 1979 to 1993) and mollusks (1986 to 1993) has the lowest optimal rents for Sabah fisheries. For Sarawak, the optimal rent is from the pelagic while the mixed species group has the lowest optimal rent. For the optimal depreciations for all species groups in Sabah from 1979 to 1994, they range from RM245 million in 1979 to RM5746 million in 1992. These are much lower compared to those in Sarawak (range from RM2978 million in 1994 to RM14181 million in 1988). The demersal registers the lowest optimal depreciations while the pelagic has the highest optimal depreciations in Sabah. For Sarawak, the pelagic and mixed species showed the highest and lowest optimal depreciations respectively.

The results also show that there appears to be an inverse relationship between the optimal depreciation and the intensity of fishing effort used for both the Sabah and Sarawak fisheries.

Conclusions

There exists tremendous potential for improvement of the fisheries resources and rents in these states if fishing effort can be drastically curtailed. In this regard, policies designed to curtail fishing effort should be actively pursued. The potentially higher rents foregone from the fisheries by overexploitation and by not achieving the bioeconomic optimum targets should be treated as costs of exploiting the fisheries stocks. These costs have been largely ignored in the present system of national income accounting. In addition, there is considerable scope for the potential application of the resource accounting framework in the fisheries and other natural resources. Further work is clearly needed in these areas.

Benefits from the study

Papers presented at national seminars and papers submitted and published in journals would benefit the public and the relevant government agencies with regards to the research methodology

and the status of fisheries resources exploitation (both current and optimal levels) in Sabah and Sarawak. In addition, the relevant government agencies may consider implementing some of the recommendations. The study also enhance the expertise of the researchers in natural resource accounting research.

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Project Publications in Conference Proceedings

None.

Graduate Research

None.