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Planning for a Resource-Rich Region: The Case of Alaska

By DAVID T. KRESGE and DANIEL A. SEIVER*

Development of the nation's natural resources, particularly its energy resources, has become a matter of increasing concern in recent years. One cause for concern is that such developments are frequently of large scale and can have major impacts on the region in which the resource is located. We report on a model which has been developed to estimate the regional economic impacts of resource development and, more specifically, evaluate regional policies designed to deal with these impacts. The model is used to analyze the situation confronting Alaska as its petroleum resources are developed to meet the nation's energy needs. The results obtained from the Alaska model are of direct interest because Alaska is such a prominent part of the overall *U.S.* energy picture. In addition, Alaska offers an excellent laboratory for a general analysis of the resource development process. Although the magnitudes of the development projects in Alaska are unusually large, this does not change the nature of the process; it merely makes the impacts easier to identify.

We give below a brief description of the structure of the Alaska model, along with a few summary statistics from historical situations. The model is then used to examine the implications of several major fiscal policy strategies available to the state. Finally, some tentative guidelines are offered for the design of effective policy strategies in regions experiencing major resource developments.

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I. An Alaska Model[1]

We have divided the regional economy into "export" and "residentiary" sectors. Production levels in the export sectors are specified exogenously, since output is constrained either by the availability of natural resources or by federal policy decisions.[2] Outputs in the residentiary industries are determined by Alaska incomes, prices, and other local demand conditions. Employment in each industry is calculated from a labor requirements function, or inverse production function. The Alaskan price level is determined jointly by *U.S.* consumer prices (almost all Alaska consumer goods are imported) and by local demand conditions. Alaska personal income consists chiefly of wages and salaries (sector wage rates are functions of *U.S.* wages and local conditions). Subtracting federal and state income taxes, as determined by the fiscal model, and deflating by the Alaska price level produces an estimate of real disposable personal income, which is the key variable determining the outputs of the nonexport industries.

In terms of its general structure, our model is similar to the regional model archetype presented by Norman Glickman. The population and fiscal submodels, however, go well beyond most regional model specifications. In the population

[1]A complete description of the model structure is given in Kresge et al. The data sources are described in Kresge (1974a, b).

[2]The principal export sectors are: petroleum; agriculture, forestry, and fisheries; fish processing; wood and paper products; and the federal government.

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