

INPUT STRUCTURES THROUGH TIME: THE CASE OF COAL MINING INDUSTRY

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THE theory of input-output analysis suggests a method for explaining a wide range of economic transactions in terms of a basic matrix of coefficients describing the technological interdependence of industries. Linear homogenous production functions are assumed and the technical restrictions governing input flows in each industry are described by a set of coefficients, α_{ij} , the quantity of the output of industry i technically required per unit of output of industry j . Since linear homogenous production functions are assumed for each industry/firm, the technical coefficients, or the a_{ij} 's, are said to be stable/constant over various operating units, as also over different output scales. In other words, constant returns to scale is assumed in factor-inputs consumption. Further, this also implies that the input-output coefficients are stable through sufficiently long period of time. The predictive value of the input-output analysis depends upon the reliability of the technical coefficients in the matrix. The realisation of the full potential of the technique calls for refinements in the description of technical structure. It is, therefore, important that the reliability of the technical coefficients at the firm level be studied in detail.

Much of the attention has been paid to test the stability of technical/input-output coefficients in the manufacturing sector. Some of the empirical studies, particularly the recent one by Ozaki¹ on some selected manufacturing industries, confirm the fact that constant returns to scale operate in the case of material-inputs consumption, while diseconomies and economies of scale operate in the case of capital-inputs and labour-inputs respectively. As against the ever growing volume of various kinds of empirical studies on the manufacturing sector industries, there are no studies, either empirical or otherwise, on the stability of input-coefficients in the mining sector. Not only this, there is also a great lacuna in economic literature regarding the laws governing production and other technical relations in the extractive sector. This aspect lies outside the scope of the present paper. The prime objective of this paper is to evaluate the stabi-

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¹ Iwao Ozaki, "Economics of Scale and input-output coefficients", in *Applications of input-output Analysis*, Vol. 2, ed. A. P. Carter and A. Brody, pp. 280-301. North-Holland Publishing Company, Amsterdam, 1970.