

LEONTIEF'S SYSTEM IN THE LIGHT OF RECENT RESULTS¹

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SINCE Professor Leontief presented in 1936 his first paper aimed at a purely descriptive analysis of the structure of the American economy, the interest in what was later termed linear economic models has grown steadily among economists.²

Today the linear economic models form the main object of many research groups; witness the meeting organized by the Cowles Commission last June in Chicago and devoted entirely to the different aspects of such models. A statistical tallying of the opinions expressed by the discussants of the paper read by Leontief before the 1948 meeting of the American Economic Association, however, may lead to the impression that the interest in his work finds its source in a dissatisfaction rather than in an agreement with what Leontief's contribution contains.

The present paper aims at considering in a systematic way the main controversial points related to Leontief's model and at showing the bearing upon these controversies of some of the recent results which were not considered by the

discussants of Leontief's paper, since they were not available at that time [7].

Three distinct steps can be traced in Leontief's contributions. In his first paper [1], Leontief does not go beyond presenting a new tool, more adequate for describing an economic reality than the classical concept of national income. Although it is stated among the concluding remarks that the *Tableau Economique* has been constructed "with the definite aim of supplying an empirical background for the study of the interdependence between the different parts of our national economy on the basis of the theory of general economic equilibrium" (p. 116), it seems clear that, at that time, Leontief's aim consisted solely of reviving Quesnay's concept and, taking advantage of the progress of modern statistical information, of applying it to describe the economic structure of the United States. Such an approach aroused no objection. It could hardly be otherwise. The usefulness of the innovation seems to have been generally recognized.³

Later on, Leontief, in order to create a theoretical background for the *Tableau Economique* and, by doing so, to provide a larger basis for its use, presented his economic model based on the input-output relationship [2], [3].

Nobody could easily deny that the *Tableau Economique* contained the observable coordinates of general economic equilibrium, but the Gordian knot consisted of deciding what theoretical approach would be most appropriate for the purpose of using them for a general equilibrium analysis. Leontief decided to follow the trodden path used by Walras, Wicksteed and many others, by assuming linearity throughout.⁴ In the two studies just mentioned, Leontief did not attempt to use the model for more than providing the input-coefficients with a relevant meaning from the point of view of economic

³ Cf. Solomon Fabricant, *American Economic Review*, May 1949, pp. 227, 228.

⁴ For the meaning of "linearity," see below, assumption (g).

¹ Paper read before the joint session of the American Economic Association and the Econometric Society in New York, December 1949. It contains in brief the main results of research by the author while associated with the Harvard Economic Research Project and which were presented during three meetings of the Project Staff in March and April 1949.

² Further references to Leontief's works will be made by the following numbering:

- [1] "Quantitative Input and Output Relations in the Economic System of the United States," this REVIEW, XVIII (1936).
- [2] "Interrelation of Prices, Output, Savings, and Investment," this REVIEW, XIX (1937).
- [3] *The Structure of American Economy, 1919-1929* (Harvard University Press, 1941).
- [4] "Output, Employment, Consumption and Investment," *The Quarterly Journal of Economics*, February 1943.
- [5] "Exports, Imports, Domestic Output and Employment," *The Quarterly Journal of Economics*, February 1943.
- [6] "Wages, Profits, and Prices," *The Quarterly Journal of Economics*, November 1946.
- [7] "Recent Developments in the Study of Interindustrial Relationships," *American Economic Review*, Vol. XXXIX, No. 3 (Annual Supplement).