Book Review

Planning with Semi-input-output Method with Empirical Application to Nigeria. By Arie Kuyvenhoven. Leiden: Martinus Nijhoff Social Sciences Division. 1978. xi + 266 pp.

Input-output analysis is being widely used in developing countries for planning purposes. For a given level of final demand, input-output analysis allows us to project the required level of gross output to ensure consistency of plan. These projections are made on the assumption that the existing production structure is optimal and it implies that an increase in demand will be met through the expansion of domestic output even when it can be satisfied through an increase in imports. On the other hand, according to the semi-input-output method, we do not have to increase the output of international sectors in order to meet the increase in demand because the level and composition of these activities should be determined by comparative-cost considerations. These are the only national sectors in which output must increase in order to avoid shortage. The semi-input-output method has been such a useful and important contribution, yet, regrettably, its influence on the planning models had been rather limited.

The semi-input-output method was introduced by Bos and Tinbergen in 1962. No doubt both Tinbergen and Hansen made significant contributions to the development and refinement of the method, but unfortunately a comprehensive analysis of the semi-input-output method has remained unavailable in the literature. Similarly, the relationship between semi-input-output method and other techniques of economic planning has remained obscure. The book under review fills this vaccum and presents a very comprehensive analysis of the semi-input-output method and relates it to the various techniques employed in planning.

The book, consisting of eight chapters and three appendices, focuses on various issues including plan formulation, insufficiency of savings, choice of techniques, substitution possibilities between capital and labour, analytical framework for planning an open economy and using it for the derivation of semi-input-output method, relationship of semi-input-output method with multi-sector planning models, and project planning. The book also contains an application of the semi-input-output method to the Nigerian economy.

After introducing the concept of semi-input-output in the first chapter, the book discusses a number of issues related to development planning in the second chapter.   The author has very strongly recommended planning in stages.   He has very correctly argued that unless planning were done in stages, there would be no feedback between macro, middle and project models, and consequently development plans would be likely to be inconsistent and uncoordinated.   This is a simple but nevertheless a very important point, and is often overlooked.   The second chapter also contains an excellent survey of such issues as insufficient savings for an acceptable minimum growth rate of GNP, the simultaneity of savings and the choice of techniques, and substitution possibilities between capital and labour in developing countries.

In the third chapter, a multi-sector model is developed wherein at first only traded activities are included but later non-traded activities are also considered. As long as the multi-sector model does not contain any non-traded activity, the system is recursive and the solution regarding the expansion of sectoral output is completely independent of the level and composition of domestic demand.   This result is due to the fact that supply tends to adjust to demand through international trade. Consequently, demand management becomes identical with balance-of-payments policies and both of these can be implemented after production decisions have been taken.   However, as soon as national sectors are introduced into the planning model, the system is no more recursive and the optimal production of international sectors depends on the composition of domestic demand and is determined simultaneously with the prices of international goods relative to the prices of national goods. Though even after the national sector is taken into consideration the composition of international sectors remains independent of the demand, yet the optimal level of these activities is determined by the variables connected with national sectors. International activities should therefore not be considered in isolation but always in connection with the complementary national activities.   It is here that one notes the importance of national sectors in planning models, because for each international sector there is a complementary bunch of investment in the national sector.   It may be noted that the concept of complementary bunch of investment is central to the development of the semi-input-output method.

The fourth chapter introduces the concept of national sector and shows the importance of national sectors in a few economies.   Based on the model developed in the third chapter, the semi-input-output method is developed, and is compared with the Little-Mirrlees method of project appraisals.   Also discussed in the chapter is the relationship of the method to balanced and unbalanced growth theories.   The author has argued that the output of only national sectors has to grow for balanced growth because as far as international sectors are concerned, their output need not be expanded to meet the domestic demand.   One may note, however, that while the developing countries are facing problems in increasing their exports, especially due to

the fact that developed countries are erecting barriers against exports from developing countries, it is difficult to ignore the balance-of-payments problems in the selection of industries.

The semi-input-output method can also be used at the sector level or even at the project level.   Application of the method to the sector level is discussed in the fifth chapter, while the application of semi-input-output method at the project level is discussed in the sixth chapter.   The author has very correctly suggested that project effects may be identified by comparing estimated changes in the economy caused by a particular project with alternative changes that would have been in the system without the proposed project.   These effects can be distinguished as direct effects (i.e. in the physical inputs and outputs) and indirect effects (the capacity adjustment in the national sectors), both of them together making up the *bunch* effect of a project.

The bunch criterion has been advocated by the author in order to rank different projects.   It is important to note that ranks of project show a reversal when bunch criterion is used instead of a criterion which takes into consideration only direct effects.   It very clearly points to the inherent dangers in using project analysis without considering the indirect effect of a project on the economy.

The seventh chapter presents results of an application of the semi-input-output method to the Nigerian economy, and identifies 106 sectors of which 4 are national sectors.   The sectors are ranked according to different criteria of attractiveness.   Moreover, the effect of restricting exports and imports-substitution possibilities on the optimal mix of activities in the Nigerian economy have been explored.

As should be obvious by now, the book contains a very comprehensive and useful analysis of the semi-input-output method.   The author has very clearly brought out the importance of using the method for planning.   We feel that the book must be read by all who are seriously interested in planning models.

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