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SOME USES OF ECONOMIC ACCOUNTING IN PLANNING ECONOMIC DEVELOPMENT OF THE U.A.R.

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I. ECONOMIC ACCOUNTING IN THE U.A.R.

THE purpose of this paper is to give a summary account of economic accounting techniques utilized in formulating economic development plans in the U.A.R. No attempt will be made at describing the design of the accounts and problems encountered in estimating the various magnitudes involved since they are discussed in other papers presented at this conference.

The initiation and use of national economic accounting in connection with the formation of economic policy and decision in Egypt dates back to the early years following World War I. It is true, of course, that attempts undertaken by earlier pioneers such as Baxter, Craig, Levy, Shafi and Anis covered only part of the terrain commonly considered to constitute the domain of economic accounting. There is little doubt that these efforts were results of policy problems closely related to changes in political and social organization.

It is only from 1954 that national economic accounting is seen to be fully associated with the formation of economic policy. Fundamental and extensive political developments, both domestic and international, brought into sharp focus the need for the creation of a central economic decision machine. Despite an early formal adoption of the central approach to development policy formation (Central Planning Committee), actual application took place only later, a fact which explains the partial and crude forms of economic accounts that were in use by 1953. During the following years the extent and type of economic accounts utilized were strongly influenced by contemporary social and economic philosophies underlying the State policy.

In the meantime, economic accounting was one of the important tools that served to bring into focus a growth perspective that went beyond the mere desire for advancement and led to an appreciation and perception of the social, economic

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and organizational changes needed to achieve it. At this stage economic accounting, in association with extremely simplified models, played a decisive role in clarifying the consequences of alternative policy decisions. Such techniques as input-output and projections of entire systems of aggregative national accounts together with associated commodity and financial flow accounts proved to be of prime importance in shaping the decisions taken by the top-most policy-makers. Needless to say, economic accounting was never a substitute for planning know-how. Undoubtedly it helped find answers to a great number of questions that arose during the stages preceding actual plan formation. But it could never determine the nature or sequence of questions leading to the choice of suitable strategy.

Since economic accounts serve the purposes of planning development only through corresponding analytical techniques, the following references to the use of economic accounts in development planning should be taken to denote associated models also utilized in the analysis and projection.

The use of economic accounting, in this sense, passed through four stages.

The First Stage (1953 to mid-1955)

During this stage the Leontief type of input-output tables was adopted. Such adoption initiated the beginning of an extensive, and perhaps most expensive, attempt at data collection, analysis and projection of manufacturing activity. At this stage, the existing economic accounts dealt with national product, income and expenditure magnitudes. National accounts existed in the crudest of forms. A particularly micro conception of planning lay behind the limited interest in economic accounting. Good planning was taken to mean, simply, to have studied and prepared single projects thoroughly. A thorough investigation implied undertaking proper engineering and market studies together with the evidence that the project would be fully financed. The situation was further aggravated by the lack of available data.

It is to be added that the attempts made at constructing estimates of national product and related magnitudes were only partly successful. Accuracy could only be achieved up to a certain level. Improvements were mainly obtained through the application of consistent definitions.

The Second Stage (1956–59)

This stage consisted of providing the background material for determining the approach to planning development. In this stage emphasis was placed upon the utilization of economic accounts in exploring the structural characteristics of the economy and in understanding the historical forces underlying the existing structure. This was the period of experimenting with various accounting designs and with alternative models utilized in connection with the long- and medium-term projections and with the annual National Budgets.

During this stage a first two-year plan-frame (transitional plan) providing details on transactions (exchange, transfer and financial) of some twelve sectors was constructed.

It was also during this stage of operating with economic accounts that Professor Frisch experimented with Decision Models applying them to the Egyptian economy (1957–9).

Third Stage (1959–60)

This was a stage of application during which it was possible to discern clear-cut policy directions, proposals and counter-proposals for specific action to be taken in the form of investment projects that could be tested for efficiency and consistency *within a national frame*. The actual preparation of the First Five-Year Economic and Social Plan for Development was carried out during this stage.

The Fourth Stage starting June 1960

The fourth stage was characterized by the attempt to utilize economic accounting and associated analytical techniques in connection with the follow-up and control of the annual plan.

Bearing in mind the magnitude of experience and frequency of institutional changes that took place during the first three stages, attention, in what follows, will be primarily directed to the second and third stages. Experience gained during the fourth stage is yet to be scrutinized.

II. USE OF NATIONAL ECONOMIC ACCOUNTS IN DEVELOPMENT PLANNING

In view of the wide variety of economic accounts constructed in the U.A.R. it will be useful to review briefly the main categories utilized during the period covered by the present paper.

As is explained in other papers presented at this conference we may distinguish among four main categories of accounts:

(i) *Accounts dealing with commodity flows;* of this there are at least two variants.
  (*a*) Commodity balance (material balances), and
  (*b*) Leontief type input-output tables (excluding the portion related to factor payments and transfers).
(ii) *Accounts dealing with factor payments and transfer flows.*
(iii) *Accounts dealing with financial transactions.*
(iv) *Accounts for groups of economic agents.*

Given that definitions utilized in constructing all of the accounts are consistent, it is always possible to establish well-defined relationships among them permitting a movement from one to the other in a clearly defined manner. All of these accounts are treated as a part of an integrated system of *National Accounts.* In order to avoid confusion, and contrary to the actual practice in Egypt, National Accounts will be defined here to denote the consolidated type of accounts suitable mostly for *Final Demand Models.*

All other accounts will be referred to under their respective names.

Diagnosis of National Economic Development

The problem of economic development in Egypt is essentially that of striking a satisfactory balance between the rate of population growth and that of domestic production and income. It is only logical, therefore, that any attempt at development planning should be seriously concerned with a review of past events in order to discover the roots of the country's poverty. Also to the extent that a development plan aims at choosing targets for economic activity and means for achieving them, it becomes necessary to study probable future trends as revealed by past events as well as the possibilities of influencing the factors underlying the existing situation. For reasons having to do with the particular structure of the Egyptian economy and with the international circumstances prevailing during the years since World War II, such an analysis deserved particular attention. Accordingly an analysis of the forces governing the rates and patterns of growth was undertaken for the period 1945–54. For this purpose, main reliance was placed upon a series of aggregative

accounts relating to estimates of gross domestic product (G.D.P.), inputs of commodities (consistently defined in accordance with a specified nomenclature applied throughout), public expenditures on goods and services on current account, capital formation (fixed and inventory accumulation) and private consumption.

For reasons having to do with the particular circumstances under which the study was initiated, use was made of approximative data and methods of calculation that would not stand the strict judgement of either statistical or economic theory. But the fact that the heroic assumptions adopted were of a type that appealed to common sense seems to explain the meaningfulness of the results obtained. The conclusions obtained served to point out in a rough but useful way the outlines of the growth strategy adopted later on in the plan.

By relating main categories of final demand to G.D.P. it was possible to distinguish the strategic factors determining the growth of the economy during the periods 1945–8 and 1949–54. It was found that during the earlier period the main limitation on the growth of production was the absolute inability to maintain capacities in both agriculture and manufacturing.

Once it was possible to rely upon imports as a source of supply of inputs and of investment goods the limiting factor became the structure of final demand. Thus we found that an increase in national income associated with the increase in capacity to earn foreign exchange was accompanied by shifts in final consumer demand, from domestic to foreign sources, which led necessarily to a decline in the rate of expansion of manufacturing activity. Meanwhile the increased capacity to import machinery for purposes of replacement implied an expansion in productive capacity that remained mainly idle. This very capacity permitted a substantial reversal in trends of growth under the impact of import substitution during later periods.

Throughout the period 1945–54 the accounts showed beyond any doubt the strategic role assumed by exports. Firstly, the exports provided a source of foreign exchange permitting an expansion of domestic productive capacity, and secondly, these were an important source for effecting short-term changes in the pattern of income distribution that left its marks upon the pattern of consumer demand.

Given the results of the analysis of forces governing the rate

of growth of production, an attempt was made to measure the impact of various types of final demands upon the structure of production. At this point, the main reliance was placed upon input-output models by using first a 4×4 and then a 7×7 table. Throughout these attempts, a general type of input-output table was also used for the following purposes:

(*a*) as a means of supplying statistical information concerning changes in the main categories of final demand at a detailed commodity level, and
(*b*) to provide very quick and rough checks on the result of calculations obtained from utilizing the 7×7 table.

This latter use was made to allow for the inevitable changes in input coefficients caused by changing weights attached in aggregations (2 digit) to industries in broader sectors. It was particularly useful in agriculture and consumer manufacturing industries, the output components of which were strongly affected by trade developments from year to year.

Structural Analysis

To the extent that planned development consists of a purposeful change in the volume and structure of domestic production, it raises questions relating to the choice of relevant objectives and adoption of the strategy most suitable for reaching them. To be able to choose the objectives it is necessary to go first through a stage of ascertaining the actual state of affairs and the feasible alternative situations. In order to choose among strategies it is necessary to estimate the consequences of each as a remover of the major obstacle or a supplier of the greatest stimulus to required changes. This calls for a structural approach.

Of the economic accounts most extensively and usefully utilized in connection with the application of techniques of structural analysis, two may be singled out:

(*a*) input-output tables, and
(*b*) Accounts for groups of agents.

Input-output accounts proved to be of particular value in investigating the relationship between changes in final demand and changes in the level and structure of domestic production. This was contrary to some *informed* opinions that tended to emphasize the relatively simple character of the economy and

the difficulties that are, rightly, involved in the construction of the accounts. But as the results of the surveys and analysis proved, the economy while not yet very complex in structure was by no means a simple economy. Already by 1954 the structure showed marked signs of departure from patterns considered most typical of low-income countries. Primary production (agriculture and mining) accounted for no more than 29 per cent while intermediate demand accounted for some 46 per cent of the total demand, of which 13 per cent was for manufactured goods and 18 per cent for primary products. By 1959 the situation had further developed away from the typical one. Income from manufacturing increased by some 50 per cent (13 to 19 per cent of G.D.P.). The share of intermediate demand rose, in its totality, by approximately 4 per cent. As expected, in a situation where final demand accounts for slightly over 50 per cent of the total demand, changes in its volume and pattern leave marked effects upon the level and structure of domestic production. When the components of such demand differ in extent of stability, there is further interest in following through the impact of each upon economic activity and the distribution of income derived therefrom.

In a situation where development strategy emphasized the need to increase capital, the utilization of the input-output approach was of particular help. Of course it had to be supplemented by other techniques permitting a transformation of sectoral calculations of output into incomes and savings by groups of economic agents. This required the construction and utilization of accounts of agents that distinguished among income and transfer payments as well as financial transactions. By cross-classifying the agents and transactions, it was possible to make use of a substantial amount of information pertaining to the activities of financial intermediaries. In this manner it was no longer necessary to assume proportional relations between savings and income.

In this situation an analysis of the behaviour of economic agents, their attitude towards the creation of savings and the manner in which they were disposed of assumed great importance. Clearly, such an investigation called for a break-down of income recipients in accordance with suitable socio-economic considerations. Thus the production (business) sector was broken into three sub-groups, public business, private organized and

private non-organized. Households were subdivided into two sub-sectors, urban and rural.

Economic Planning

Historically, the use of economic accounting in development planning is associated most closely with the preparation of the Five-Year Plan for Economic and Social Development and subsequent annual plans.

In reviewing the actual use made of economic accounting in this connection, it is useful to distinguish between the two main phases of the second and the third stages described previously. The earlier of the two phases served to draw the main lines of the development plan while the second phase helped specify details.

During the first phase, economic accounting was mainly utilized in providing growth perspectives. It helped build up clear impressions of the structure of the economy expected to prevail in the long run under alternative qualitative and quantitative assumptions. In this manner it helped qualify the selections of the appropriate strategy for the future growth of the economy. The role of economic accounting in this connection consisted mainly in bringing into focus the essential nature of some measures leading to growth. By combining calculated requirements for alternative growth rates with knowledge of physical and technical limitations in agriculture, it became clearer that the expansion in the economy had to come mainly through industrialization.

In constructing the growth perspective the focal points covered a span of one to two decades. Projections of production were undertaken at two different levels of aggregation of economic activity using 3×3 and 12×12 Leontief types of input-output model. In the more detailed projections, technological changes were allowed for in agriculture and newly-created branches of industry.

Also the approximate magnitude of foreign loans needed was determined in this phase. Projections of G.D.P. and its allocation between consumption and investment, under alternative assumptions concerning patterns of output growth and income distribution, left very little doubt as to the necessity of raising both the rate of domestic savings and the rate of borrowing abroad. This fact was brought into focus as early as the summer

of 1957 when a first frame for a two year transition plan was set up. It was clear by then that to realize a rate of income growth slightly exceeding the rate of population growth, investment had to exceed the rates prevailing at the time (running close to 9 per cent of G.D.P.).

Meanwhile, experience has proved beyond doubt the usefulness of establishing and utilizing at this early phase certain auxiliary accounting systems that served to fill in details of visualized shorter-term situations with greater realism than would have been possible with the Leontief type of input-output tables.

This was particularly the case when taxation questions were raised in connection with the problems of financing investments. The need called for a system of accounts that would take off from where the Leontief input-output model ended. This was done by inserting the output solutions into a set of articulated accounts (production, appropriation and investment) corresponding to each producing and consuming sector. By separating transactions that are directly related to production, i.e. directly proportional, from others that are relatively more independent, it was possible to investigate the impact of alternative patterns of projected growth rates upon changes in income distribution.

Once the situation for taxation was clear, the same procedure was utilized in investigating possibilities of financing the deficit in the State budget. Having more or less determined the volume and pattern of production in the first stage, and also what seemed to be an acceptable pattern of income distribution, the next problem consisted in locating and mobilizing the savings generated within the economy. To undertake this task the accounts were further classified in accordance with suitable institutional criteria. Within the business sector that implied the separation of the organized set of enterprises from the non-organized. In the sector of administration, social security agencies were separated and set aside together with financial intermediaries. With the financial transactions already spelled out in great detail, it was possible to draw a picture of what seemed to be a feasible approach to channelling savings.

Difficulties were obviously numerous and in most cases great. Such was the case when the attempt was made to relate the volume of savings to acquisition of financial assets. The historical background, as such, was of little use unless viewed in great

detail. The situation could only be adequately handled through a detailed break-down of savers and financial transactors. In view of the shortage of direct evidence, the results were far from satisfactory. The fact that a large portion of savings was accounted for by agents whose transactions could not be clearly classified under household or business was a serious source of difficulty. Equally serious was the impossibility of distinguishing among categories of savers in a fashion that could serve to throw adequate light upon their preference for holding various forms of financial assets. The problem was further aggravated by the element of instability introduced by frequent institutional changes introduced during the period of time covered as a base for projection.

The second phase in the utilization of economic accounting represents a higher level of sophistication. Accounts served as background material in guiding specialized agencies in proposing investment projects. They were also the main tool for checking the consistency of the plan(s). Lastly they were utilized in connection with the establishment of an optimal investment plan, through the application of variants of the Oslo Decision Models. It must be emphasized though that in actual practice and for reasons having to do with the quality of project description data and the reliability of interflow information the optimal approach was utilized only for checking the reasonableness of results obtained by the simpler stage-by-stage procedure.

At the earlier stages of the preparation of the investment programme, sectoral projections of output targets and the availability of capital were utilized in proposing individual projects. The method consisted, essentially, in combining global projections of domestic product, imports and final demand aggregates together with an input-output model in order to determine the sectoral production and import implications (in producing sectors) of these global projections.

Projections at this stage were undertaken without import substitution, the nature and magnitude of which could only be judged at a later stage after project proposals were obtained. Final demand was projected for each of the main categories of (*a*) consumer demand, (*b*) Government consumption, (*c*) domestic capital formation and (*d*) exports.

Personal consumption was projected by means of coefficients of elasticity derived from experience, primarily from urban

areas, with allowance made for changes in the size and regional distribution of household units.

Government consumption, on the other hand, was projected on the basis of (*a*) a detailed analysis of purchases during the base year (1959–60) and (*b*) hypotheses concerning the rate at which the State was to expand its services.

Gross investments were determined in accordance with product-capital ratios, the committed investment of the public sector and estimates of replacement requirements. In view of the relatively aggregated character of the input-output table utilized (12 × 12), the sectoral breakdown of investment did not present serious difficulties.

Exports were projected mainly by commodity categories, and in accordance with the international market studies. At this stage no attempt was made to allow for import substitution, though allowance was made in an approximative fashion for changes in the pattern of personal consumption and for a reasonable shift in investment from housing construction to manufacturing and transportation.

Once we had a given set of projects that required given inputs as a means of providing stated outputs, the question arose as to the manner in which they were to be combined together with existing capacities to provide output solutions consistent with demand limitations in the model(s). The elements in the situation that had to be fitted together consisted of individual projects, projections of demand and supply for individual commodities together with an economy-wide analysis of interrelations among domestic sectors of production and the balance of payments. This called for a sufficiently detailed breakdown of commodity-wise demand and supply projections.

At this point use was made of a general input-output table in which products were crossed against sectors. This constituted a part of the economic accounts labelled 'commodity balances'. Once conclusions were obtained at the level of single commodities (or groups thereof) it became possible to pursue the implications of any balanced system in terms of factor and transfer payments. In order to obtain the balance we proceeded by iteration, checking at each round the possibilities of fitting into the obtained picture any information concerning capacity limitations, possibilities of altering inputs (within limits) as well as possibilities of shifting from domestic to foreign sources of

supply. Occasionally of course elements of final demand were reconsidered in order to arrive at what appeared to be a feasible solution.

From the practical point of view, there are two advantages of this procedure. First, it provides the possibility of checking the reasonableness of solutions as the process proceeds step by step, permitting the recognition of a number of alternative outlets from any imbalanced situation. Thus it is possible to consider changing the supply from two alternative sources, domestic production and imports, or changing the final demand. A second advantage consists of the very handy manner that it provides for checking possibilities of emphasizing capacity utilization or changing input requirements. The more detailed the classification of commodities the easier it is to formulate an informed judgement.

Once the problem of determining the real flows is solved, further cross-checks are applied in the form of income-consumption relations hypothesized and in the light of the saving-assets relationship. In the meantime adequate consideration is given to possibilities of changing the supply of assets as a means of influencing projected liquidity of savers, etc.

In this connection it is clear that while the starting-point is always the real-flows accounts, the system of related supplementary accounts provides the grounds and sources of a possible reconsideration of solutions arrived at. The advantage of the procedure lies in achieving a rational pattern of resource allocation in a situation characterized by lack of correct information and by the high cost of improving the information that is available. Where the price mechanism is not smoothly operating, administered prices are extensively utilized and where information relating to physical magnitudes is not correct, the more sophisticated mathematical programming formulations will not represent the problem properly.

It is apparent, therefore, that advantages of utilizing a trial and error approach are closely related to the use of commodity balances.

III. SOME LESSONS OF THE EGYPTIAN EXPERIENCE

Accuracy of Accounts

The possibilities of constructing sound economic accounts are

closely related with the quality of available statistical information. Accuracy of such information will, by necessity, affect the results of calculations. In this connection it is very useful to recognize the close ties between the three basic links, namely, project description data, information entered into economic accounts and the analytical method utilized. Striking a proper balance among these links constitutes a most useful and desirable approach. A proper balance in this connection goes beyond the mere matching of the quality of planning methodology, of information utilized and of the quality of the planners who help formulate relevant questions and find answers to them. In addition, it should introduce into the situation a dynamic element where, by improving the quality of each and any of the links in the chain, a pressure is created leading to further improvements in the others. In short, we need a situation of mild imbalance that would initiate a mechanism of inducement for continuous improvement. For a country seriously desiring an overall development, it is important not to underestimate and/or overemphasize the question of accuracy of economic accounts. An allowance, however, should be made for the quality of information pertaining to projects forming the proposed sectoral investment programme. The lack of qualified personnel, e.g. engineers, agronomists, economists and administrators, who are capable of producing well-designed specific investment projects makes it rather meaningless to allot undue time and energy of the scarce trained personnel to refinement of statistical data. In the U.A.R. the problem of accuracy of information was solved in a pragmatic fashion. The earliest attempts at constructing the accounts were based upon the available information resulting from the censuses of agriculture, industry, trade and population together with all the obtainable information collected for administrative purposes. Most of the data did not fit together; sometimes they were even contradictory. The situation improved gradually as work proceeded and it became possible to establish priority areas upon which we concentrated our efforts for improvement. By undertaking patching and matching operations it was possible to obtain accounts that were up to the level of complementing information concerning individual projects. In this way it was possible to delay certain large-scale activities of data collection for a considerable period of time. Such was the case with the family budget sample survey which was undertaken

during 1959, i.e. four years after the completion of the first full-scale system of accounts.

It has been our experience that a process of gradual improvement of data, as suggested by the requirements of constructing the accounts, is most efficient and economical in a situation where required human resources are relatively scarce and sources of information are not quite sympathetic to the idea. Most important in this connection is the ability to choose the proper areas for starting improvements.

One useful approach is to concentrate on the completion of the account of commodity flows. Once it is brought up to a reasonably satisfactory state, it becomes possible to improve the remaining accounts by using partial but representative information. Consistency in applying definitions has proved to be extremely useful. In this connection a detailed nomenclature of activities, commodities, transactions and economic agents will prove to be of utmost value.

Design of Accounts

At the earlier stages of planning it is only normal that experimenting with techniques of projection (planning) will absorb a substantial portion of efforts. This calls for two things:

(*a*) the adoption, as early as possible, of a highly flexible system of economic accounting, and
(*b*) locating the responsibility for constructing the accounts within the planning group.

By flexibility is meant the possibility of shaping and reshaping the available information in a form most suitable for serving the needs of alternative analytical models. This will be found to be closely related to the adoption of detailed nomenclatures for commodities, transfers, financial claims and groups of economic agents. In this manner the form of the accounts permits the application of aggregative techniques of analysis together with the more detailed approaches of input-output and linear programming.

The system of multiple classification of economic agents has proved to be a very useful source of information, particularly with regard to behaviour patterns. Thus conservation of technical and organizational criteria, together with the criterion of size,

were important elements in determining the flexibility of the design of accounts.

Responsibility for Constructing the Accounts

The responsibility of constructing the accounts, at least during the earlier stages, must be located within the planning organization. The very close historical ties that relate the initial work on the accounts with planning efforts call for such a decision. The dearth of data makes it sometimes necessary to use information of doubtful validity. Pure guesses, extrapolations from past experiences, imported information and some wishful thinking intermingled in various forms and proportions may be utilized, at least during the early stages of planning, to formulate an investment programme for any given sector. Now if we consider that one of the main tasks of the economist-planner is to impart a sense of reality to the investment figures, it is only reasonable that we give him the responsibility of doing so in connection with the estimates to be incorporated in the accounts. Only a person who knows the limitations of utilized information can know the limitations of conclusions based upon it.