ECONOMIC ACCOUNTS FOR DEVELOPING COUNTRIES

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This paper has three parts. The first part attempts to analyse the prevailing situation in developing countries. The second part presents a feasible accounting system for such countries, by and large within the framework of the SNA. The third part goes beyond this and tries to obtain a more concise matrix (covering, in concept, those given in the accounting system) furnishing minimal sets of variables and classifications which one has, in any case, to play within the context of policy issues of developing countries. All three authors are jointly responsible for the first part. Uma Datta Roy Choudhury has drafted the second part. The third part has been drafted by the other two authors.

PART I: DEVELOPING COUNTRIES: GENERAL FEATURES AND PROBLEMS

1.1. Developing countries comprise a heterogeneous group and the concept itself is nebulous. But it is more homogenous than "all countries," and if we are permitted to seek a single framework for collecting and presenting economic information for all countries, we should also be permitted to do so for developing countries. Thus the quest for a system of Economic Accounts for Developing Countries (EADC) is permissible like the quest for an SNA for all non-socialist and for an MPS for socialist countries. The quest is necessary because neither SNA nor MPS can satisfy all the needs of developing countries, and in addition, these systems suggest collection and systematization of some bodies of data that are only remotely connected with the current problems of developing countries. We endeavour in this part to examine briefly what distinguishes developing countries from the other countries.

1.2. Organization of economic information is necessasry for judging the current performance of a nation and for envisaging the different possible growth paths, sectoral and global. For both these requirements, we need information for a number of years. This is independent of the degree of public management of the economy and the institutional peculiarities of the country. In the post World War II era, many of the developing countries have become acutely aware of their relative poverty, and the governments of these countries are expected to adopt policies which will bring about a more rapid rate of growth. Of late many of these countries also seek a more egalitarian distribution. And long period stability of the existing regimes may possibly depend on their ability to deliver these to their peoples. National accounts, originally intended for efficient short period management of the economy, now are required to supply information necessary for the formulation and implementation of policies relating to growth and distribution.

1.3. Confronted with this situation, the men at the helm in these countries grope for ways and means of achieving a reasonable rate of growth with some improvement in the pattern of distribution. They use the accumulated understanding about the functioning of advanced economies and socialist countries, they borrow the methods tried in these countries, and the system of economic information they try to build up is linked with a relatively alien theory and a complex of procedures tried abroad. When there is some accumulated native

experience, this also is, no doubt, used but frequently all these put together prove inadequate. By and large, the failure is due to a lack of understanding of the proximate behaviour of the economy when subjected to acceptable measures on the one hand and an inability to set up efficient economic management systems suitable for the peculiar socio-economic conditions in the countries, on the other. This leads to floundering of the two known types of planning for development. Consequently, the economic information system for these countries should not only permit the use of known methods but should also encourage research which may ultimately lead to a new type of development planning suited to these countries.

1.4. It is admitted in all quarters that poorer countries cannot develop rapidly entirely through private motivation, and there is need for a substantial public sector. There may be divergence of view about the extent of socialization, and this naturally would depend on the nature of the economy and the political affiliation of the country. In general, complete socialization of productive assets is not contemplated. But when the need is felt, several developing countries would not hesitate to start productive activities of all sorts in the public sector. The presence of a sizable public sector side by side with the private sector thus distinguishes developing economies from both socialist countries with emphasis on almost complete socialization and non-socialist countries where the basic drive for production comes from the private sector. The planning in developing countries is, therefore, complicated by this phenomenon.

1.5. The economic motivation for production, consumption, etc., in developing countries presents a mix differing from country to country. This may be described as a pluralism comprising groups closely resembling modern economies on one side and traditional groups functioning on non-economic motivations on the other. In between, there are groups in intermediate positions. As a consequence, production in these countries uses diverse technologies ranging from the modern to the traditional in respect of both physical fabrication and human organization. Further, the disposition of traditional production has a pattern different from that of products emanating from the modern sector even when the items produced are similar. A substantial proportion of production from traditional institutions are consumed by the producers themselves as final or intermediate products or used for asset formation without passing through the market. They are quite often also bartered by the producers in exchange for other goods. However, such forms do not necessarily exhaust the types of transaction in such products and such products are also sold in the market in exchange for money. The primary purpose of production could be just to satisfy the bare needs and hence non-economic in some cases or to maximise cash income rather than aggregate income in some other cases and hence economic but not in the accepted sense. Production in the modern sector, on the other hand, passes through the market before it reaches either the final consumers or the producers for intermediate consumption and asset formation. For reasons such as these, for a number of flows encountered in developing countries, it becomes necessary to modify the definitions as well as the procedures of measurement from those recommended in the SNA. It is also necessary to present the results in a manner that highlights certain structural features. Further, the details of supply and

disposition of gross input and gross output of production within each individual sector should be presented separately for different production techniques to the extent possible.

1.6. In the capital account, similarly, for a balanced picture of the measures of total savings and total investment, the estimates of savings have to include savings of household industries and of the population in the form of physical assets which do not have corresponding "sources of finance" measures as they do not pass through the money market at all. This would mainly comprise capital formation in rural areas undertaken with own labour and materials where no corresponding financial transactions exist. Such estimates are important both for grasping the structural details and for planning. They help in obtaining a comprehensive measure of the size of the subsistence economy at any point of time, and also consequently indicate the extent of financial resources required for investment. In the rural areas and in the traditional industries in the urban areas, even when sources of finance for capital formation are financial institutions, they are quite often the financial intermediaries of a traditional type. These institutions, by and large, do not maintain proper accounts and, in addition, carry on other business. These special features suggest that for developing countries, the role of financial institutions and banks is different from that in the advanced countries and the SNA needs to be modified accordingly for a meaningful presentation of the transactions.

1.7. Quite often traditional production in the rural areas uses own-account output of raw materials as inputs in addition to own labour, thus being very similar to production for own consumption qualitatively. The ownership of such industries is generally limited to households and individuals. In such cases it is extremely difficult to obtain a satisfactory measure of distributed factor incomes and primary incomes. Even when such enterprises employ labour, the payment quite often is in kind and not in cash or partly in kind and partly in cash.

1.8. Again, in developing countries where agriculture and allied activities frequently contribute a major share of the domestic product, production and employment are seasonal in character. Households are often engaged in activities like "subsistence agriculture" and "handicrafts" in which all the members of the household are joint contributors of labour. Thus, the occupational pattern becomes seasonal to enable the household labour to tide over periods of seasonal unemployment. Such diversified occupations often form the major source of income of large sections of households and it becomes necessary to evaluate all such activities of the households for a complete and proper measure of total income generated by all economic activities. To solve the problem, it is not only necessary to define and introduce a new sector comprising household enterprise and new transactions in the production accounts of the sector but also to waive the conventional industry classification, reckoning households as composite enterprises where a number of economic activities take place at the same time. The industry classification can come later, when need arises and data permit, as a subsidiary partition of aggregates relating to this sector.

1.9. There are three implications of the existence of traditional and quasi-traditional sectors in developing economies, where economic and non-economic decision making intermingles to determine the production and use pattern of

goods and services. First, for such sectors assets as conventionally measured or outputs in value terms furnish inadequate measures of the importance of an activity and it is necessary to bring the household, its composition and its dependence on outside labour explicitly into the picture alongside its asset holdings and outputs. Here, the problem of increasing output cannot be solved on the basis of an analysis solely of assets, economic inputs and outputs: it is necessary also to understand the social organization of the units that produce and utilize products. Incorporation of a manpower balance of the type used in MPS with necessary modifications should, therefore, be an essential part of the accounts for developing countries. One most important detail here relates to skill, because skilled manpower is usually scarce while unskilled manpower is abundant in most seasons. Another important detail is the degree of dependence on outside labour. It is, of course, true that definitions of labour force and employment have to be standardized before necessary data can be collected and presented.

1.10. One additional advantage of incorporating labour force and employment data in EADC is that it at once makes one conscious of productivity per worker and its change over time. It is difficult to foresee a continuing rise in living conditions without a rise in productivity per worker, and this obvious fact has not been stressed in the SNA, even when necessary data are available in the system.

1.11. The second implication is that not all goods and services are sold at prices above cost, and when services are rendered free or provided on non-economic considerations, we feel uncertain as to how far they should be included in GNP by imputation. We do not feel equally uncertain about goods (and perhaps material services) even when they are rendered free or supplied on non-economic considerations like retention for consumption of own product. At the other extreme, the government renders some special services in such countries including economic management of public sector enterprises, and highly skilled non-material services are not only in very short supply in many developing countries but also have a longer gestation period than even the production of complex machinery when their domestic production is contemplated. Finally, where extreme poverty prevails, provision of essential goods like food, clothing, etc., must have precedence over provision of services, even of the beneficial types. On all these counts, a separation of goods and material services from non-material services will be desirable for developing countries, the latter further split into skilled and unskilled services.

1.12. Finally and very importantly, the existence of pluralism must be accommodated in the basic institutional sectoring of the economy. In the accounts that follow we have treated households, the private corporate and registered sector, and the public sector as the three institutional sectors of the economy, meaning thereby that all traditional and quasi-traditional productive activities are to be accommodated in the household sector. But the household sector can be subclassified say by urban and rural, or by stages of development, e.g., tribal and non-tribal, and so on.

1.13. We require economic information for several years so that we can judge the current performance of the nation against its past performance and can put forward reasonable hypotheses about its future pattern of growth. To the extent the economic information is given in terms of value, it is, therefore, essential that

the estimates be available not only at current but also at constant prices. In the real world today, in many countries, prices have a chronic tendency to rise. The balancing provided by the various entries of an accounting system at current prices is meaningful, but for any policy use of an accounting system we have to consider a balancing that pertains to a future year. The use of base period information can serve as a guide for the future only when prices are anticipated to change marginally or when prices are likely to change uniformly on most fronts. But this requirement is utopian and hence it is idle to work with national accounts only at current prices. In addition, the annual shifts in monetary flows of output, consumption, capital formation and their breakdowns have little meaning in an inflationary situation. To have an understanding of how the economy is changing, it is, therefore, essential that we have a carefully worked out deflation procedure to translate all current money flows to real volumes. This will entail more systematic collection and processing of price data. Once this need is felt and driven in, it should not be different to evolve a statistical system supplying the required information. The simplified accounting system that we present in the next part should have all its entries expressed both at current prices and in real terms. One disadvantage of more complicated systems is that it is almost impossible to accomplish this task in respect of all their entries.

1.14. The problems of size distributions of income, consumption expenditure, etc., have not been considered in the SNA, nor have the distributions of relevant variables by social classes. Both these types of information are, however, more important for developing countries than for developed nations. Income disparities are normally larger in developing countries than in developed countries, and such inequalities in countries where average income is low imply sub-normal levels of living in lower income brackets. It is imperative, therefore, for such countries to take action so that the disparity is not increased and if possible, reduced. The possibility of a regime continuing peacefully, as we have stated earlier, may even depend more on its ability to tackle this problem than on its capacity to attain a reasonable rate of growth or to have a competent short period management of its economy, the last task alone being usually permitted by a traditional system of national accounts. In view of this, developing countries can ill afford to neglect size distributions of income, etc., in their accounting systems even from the very beginning. While we have not explicitly included size distributions in the accounts that follow, they are incorporated in the system, in concept, in the forms of associated tables giving size breakdowns of the relevant flows. This has been brought in more explicitly in the interflow table in Part III.

1.15. The necessity of having estimates of several variables by specified social classes is more subtle. Populations of developing societies are split up into diverse social classes at various stages of development ranging from primitive tribal people to highly modernized urban groups, and the process of development implies changes in all such groups. Different groups have different economic motivations and different production technologies. The relative stability of parameters of production and consumption functions of modern societies depends partly on technological factors and partly on behaviour uniformities of institutions and households of a reasonably homogeneous people. Such a stability in developing countries, on the other hand, can only arise out of the interaction

between the relatively stable parameters within social classes and the shifts in relative weights of the different classes as proper parts of the nation. It is, therefore, necessary to study the shifts in the class composition of the nation in terms of economic output, outlay, etc., and any useful accounting system should provide information that could be used for this purpose. Segregating household enterprises in our accounting system is necessary for this purpose, but not sufficient. Similarly, a rural-urban breakdown of output and outlay could give only a crude approximation of what we need. What is ultimately needed is a classification of the more important social classes of a country and separate accounts for classes in a very simplified form. As we have indicated earlier, EADC conceptually includes the breakdown by social classes through an appropriate breakdown of the household enterprise sector. This classification, naturally, will vary from country to country.

1.16. Certain peculiarities of the external transactions of the developing countries may be noted. Exports usually include a lot of primary output and imports emphasize capital equipment and industrial products. Thus a more balanced pattern of export is needed alongside a policy of import substitution. But apart from this, there remains the problem of foreign aid for economic development. Most developing countries seek rapid industrialization, and for this, they have to solicit aid and loans—both for capital and know-how—eventually giving rise to the problem of repayment. Frequently, the industries started on the basis of profitability considerations do not prove to be socially desirable. There is, therefore, a need for information to analyse the problem from the point of view of the society. It should be possible for a country to satisfy itself as to when it is desirable to start an enterprise with foreign loans, aid and collaboration, and the economic information system has to provide data enabling one to answer these questions. We have tried to provide for this in our accounting system as well as in the interflow table.

1.17. We have dwelt earlier on the need to separate goods from services in the accounts of developing countries, and one reason given was the relative importance of government services in these countries. Public services catering to education, research, health and nutrition in these countries are far more important than their counterparts in other countries. Education is closely linked with labour productivity, and private outlays here are grossly inadequate for a reasonable development. Research is important not only for improvement of the technology of production but also for discovering appropriate human organizations for administration in the public sector and production in diverse social classes. The standards of health and nutrition fall far below the minimum biological requirements, particularly for the poorer sections of the population, and improvement of these standards may lead to an increase in labour productivity more than sufficient to offset the cost incurred in the measures for improvement. Thus, all these services including the maintenance of health when expanded in the right direction would increase consumption as conventionally defined and production potential simultaneously. We have not done much about this, apart from a separation of the flow of services in the accounts, and we hope to be able to devise a sub-classification of services in the supplementary tables in future. But it is our conviction that these activities demand as close attention as the other

economic variables in the context of policies of growth suitable for these countries.

1.18. Any set of national accounts for developing countries, therefore, needs to be in a form where all these factors and their implications for economic development are highlighted so that the accounts become representative of the structural pattern of these countries and can be fully utilized for plan formulation and plan evaluation. The purpose of national accounts, however, is not exhausted with such applications. They are also expected to supply information for economic research. In advanced countries, there has been, in the past, a good deal of economic research on policy uses of data available from national accounts yielding fruitful results and enabling one to understand the detailed functioning of the economy. These studies have helped in laying down the foundations of an empirically testable theoretical framework for these economies. In contrast, for developing countries, a similar theoretical framework is non-existent and even policy uses of economic information is yet rudimentary. Researches undertaken in developing countries have often been simple applications of theories developed in advanced countries using concepts and dealing with problems which are unsuited to such countries. This is a result of the absence of a workable theory of development and the dearth of relevant economic information. All this highlights the immediate need of having an economic information system for public policy as well as for possible research needs so that the immediate requirements for policy purposes are satisfied and foundations are laid for development of a theoretical framework for developing countries. The system of national accounts specially formulated for developing countries would be the first answer to such an economic information system. Such a system will obviously take into account the special features of developing countries which have been broadly detailed so far.

Part II: Economic Accounts for Developing Countries (EADC)

2.1. At present two systems of measurement and presentation of national product data are in use, one as defined in the UN System of National Accounts (SNA) and the other termed the Material Product System (MPS) or the National Balances for the Economy. While the general framework of the SNA is built around the four simplified accounts of the nation, it is, taken as a whole, a much more elaborate system integrating the input-output and the flow-of-funds accounts and the basic data on holdings of assets and liabilities. The MPS, on the other hand, consists of four basic source and use tables termed "Balances" and a large number of supplementary tables which give further details on the balances. Though generally, the National Balances for the Economy are presented in the form of tables, it is also possible to integrate the data included in the MPS in the form of a set of accounts which would help in having a more comprehensive understanding of the structure of the system as a whole and in undertaking economic analysis.

2.2. The SNA is a very comprehensive system co-ordinating basic economic statistics on a number of aspects at the same time. However, the system as a whole is too elaborate and extensive to be adopted for annual presentation of data and is

suited more to the needs of advanced industrialized countries which function, by and large, under a Keynesian theoretical framework. The SNA has, also integrated within it, the fruits of applied economic research undertaken in many advanced countries in the recent past in fields such as inter-industry studies, flow of funds analysis and the use of macro-economic models for short-term forecasting and medium term planning. MPS, on the other hand, though extremely useful for studying certain aspects of economic behaviour, is particularly suited for countries having the special institutional arrangements which give very little scope of variation between sectors in financial claims. This is so because under this system a complete socialization of productive assets is assumed implying also the existence of comprehensive economic planning. Further, the basic principle underlying the MPS is the theory of social product in which the rendering of non-material services is considered to be redistribution of income and not production. In the context of our discussion in Part I, it is clear why neither of the above two systems could answer the requirements of the developing countries though it is true that the SNA partly answers the needs of these countries.

2.3. The framework of economic accounts for developing countries could be formulated *ab initio* without taking into account the systems developed so far. This process has two limitations. First, there is a risk of including some redundant information in the system in the absence of an accepted theoretical underpinning. In the context of scarcity of funds and skilled hands in developing countries this might be a risk worth avoiding. Second, for inter-country comparison of structural differences between the developing and advanced countries it is essential that certain aggregative economic measures become available from the national accounts without much effort. This can be most conveniently achieved if the system of economic accounts for developing countries is framed keeping the SNA in mind and built up as a subsidiary system rather than as an independent system. In the present exercise, therefore, simplification and modification of the SNA is attempted in a manner which would bring forward the special characteristics of developing countries and still retain the main features of the SNA. The system suggested adheres to the basic framework of the four accounts of the nation and the corresponding accounts at the branch and sector level with modifications in detail. Some marginal changes in the consolidated accounts of the nation are introduced in Accounts 1, 3 and 5, *viz.*, Gross domestic product and expenditure, National disposable income and its appropriation, and Capital finance accounts respectively with no changes in the Account for external transactions. Next, to make the system more manageable for developing countries and also fully integrated, the same set of branches and sectors are used for Production, Income and Outlay and Capital Formation Accounts. Also, no separate accounts are envisaged for "commodities" and "industries" similar to SNA. This is in view of the limited availability of data and not because of any conviction that such details are unnecessary for developing countries. Also, in the accounts, the number of branches and sectors is limited to the absolute essentials so that one is not lost in details. The primary purpose of the present exercise is to develop an accounting system for developing countries and the differences from SNA that arise are because of the details which need highlighting. We have integrated the charac-

teristic transactions and sectors into a system of accounts which broadly follows the principles of SNA but is substantially different in detail.

2.4. One of the main features of the accounts suggested is the distinction between goods, including material services, and non-material services as two main distinct branches of economic activity, with the three main sectors of production and income generation being the private corporate, public and household sectors. To distinguish between households as producers and as final consumers, the latter is termed "population" in contrast with "household enterprises" in the case of the former. The distinction between sectors is from the point of view of ownership and organization as well as institutional character. Thus, in the present set of accounts only one class for transactors is used for both Accounts II and III (Production, Consumption Expenditure and Capital Formation and Income and Outlay and Capital Finance Accounts) contrary to the two classes of transactor units suggested in the SNA. Besides the fact that this helps in making the system fully integrated between the two sets of accounts, this classification uses the establishment type of units (according to kind of economic activity) as the primary unit of classification and makes the problem of collection of data much simpler. This uniform classification is particularly useful for the developing countries because of the predominance of the household sector where often a number of economic activities are pursued by different members of the household either simultaneously or during different periods of the year as joint enterprises and it is almost impossible to collect data separately on either the factor incomes accruing from or the inputs into the different economic activities. Besides the problem of collection of data, it is desirable that the non-corporate household enterprises be represented as a separate branch in the system of accounts for developing countries because of their traditional and joint character.

2.5. Besides the modified consolidated Accounts of the Nation, two other sets of accounts suggested in the present exercise are:

(i) Supply and Disposition of goods and services and Domestic Production of these goods and services for the three sectors, public, private corporate, and non-corporate household enterprises and Consumption Expenditure of the population

(ii) Income and Outlay and Capital Formation/Finance Accounts.

These correspond to Accounts I, II, and III respectively of the SNA. The modifications suggested in Account I are those which automatically follow as a result of special sectors/transactions introduced in Accounts II and III. This is particularly true in this case because, contrary to the SNA where two different classes of transactor units are used for Accounts II and III, in the present set, only one set of transactors is suggested. This classification uses the establishment character as the primary unit of classification (with further classification according to kind of economic activity to the extent possible) and makes the problem of collection of data much simpler. However, for unincorporated enterprises, classification according to kind of economic activity will not be an easy task and it is possible that the absence of any such classification would also stand in the way of complete disaggregation of the economy by type of activity. Keeping in mind the composite character of the enterprises particularly of the household sector, the

primary classification according to type of economic activity suggested here is:

A. Goods and material services, and

B. Non-material services.

In the accounts, this broad division is to be used in industrial classification of establishment type of units according to kind of economic activity where the availability of data permits such classification. For developing countries, it is, however, not desirable to have a large number of industrial groups for the accounts and the following branches may suffice. Thus, for goods and material services, the classification could be (i) agriculture and allied activities, (ii) mining and quarrying, (iii) manufacturing (including electricity, gas, etc.), (iv) construction, (v) transport of goods and communications, (vi) distributive trade and storage, and (vii) others. For non-material services the classification is more institutional in character and hence more heterogeneous. The classification in this case could be under the categories of (i) passenger transport, (ii) finance and insurance, (iii) real estate and house property, (iv) general government, (v) health, education and other social services, and (vi) personal and other services. Of course, as has been elaborated earlier, the more important distinction for each of the two broad spheres of economic activity is the classification by type of organization, *viz.*, public (1), private corporate (2), and non-corporate household (3). Thus, for each of "A" and "B" the accounts are prepared separately for 1, 2 and 3 with the branches of economic activity as suggested above within each of 1, 2 and 3 separately for "A" and "B." The classification of sectors suggested for the present system is somewhat summarized when compared with the SNA. This is mainly based on experience regarding availability of data and desirability of details for developing countries. The distinction between the material and non-material sphere, on the other hand, is much more highlighted though it is true that the basic distinction is not contrary to the classification in SNA. In developing countries where the availability of social and personal services calls for much improvement and the planning process needs to integrate within it special programmes for improvement of the standards of health, education and other social service facilities, the distinction between levels of commodity production and availability of social and other non-material services like passenger transport becomes particularly important. This distinction has also other advantages because of the differences in cost structure and investment pattern which are important points for consideration.

2.6. The actual form of the economic accounts system is, like the SNA, based on a conceptual matrix. This matrix is constructed in such a way that it presents each of the economic processes that are important for developing countries. The matrix and the notations used are presented in Annex I at the end of this section.

2.7. Going into the details of the accounts, the first set gives the Consolidated Accounts of the Nation suggested in the SNA with such marginal extensions of the system as desirable. The second set gives the supply and disposition of goods and services divided into Account "A" for goods and material services and Account "B" for non-material services. Account "A" is expected to be split up further between economic activities producing "goods" and "services connected with production" even if further division between industrial classes is not feasible. However, for household enterprises even this broad sub-classification may be

difficult. Account "B" covers all non-material services and can be classified into those that are strictly complementary to material services (e.g. passenger transport) and those that are personal and social services provided either by the public sector or by the private corporate and non-corporate sectors. The third set of accounts on Domestic Production are, therefore, principally presented for

A1: goods and material services, public sector
A2: goods and material services, private corporate sector
A3: goods and material services, private non-corporate household sector
B1: non-material services, public sector
B2: non-material services, private corporate sector
B3: non-material services, private non-corporate sector

The distinction is not only in terms of controlling authority but also in the production technique (modern vs traditional) and in the pattern of supply and disposition.

2.8. The Income and Outlay Accounts are provided for the same set of sectors and organizations into which the resident transactors are classified above. Since these institutions exhibit significant differences in the type of income receipts and disbursements, the details of the different categories of transactions recorded in these accounts differ between sectors and give interesting information in detail. The variations in detail reflect the differences between these sectors in the nature and importance of various items of receipts and disbursements. These accounts are linked with the Domestic Product Accounts through the operating surplus of enterprises or the income of self-employed or income of the population and can be used for consolidation at the national level and measurement of disposable income. As will be obvious from the details in these accounts which attempt to record all current receipts and disbursements arising from ownership of property and also from current transfers, the types of transactions differ among different institutional sectors and not all entries appear in every account for each sector. This is particularly true of the household enterprise sector where the categories of incomes and outlays are somewhat different from those for the other institutional sectors.

2.9. The Capital Formation/Finance Account appears next. It will be seen (from the illustration) that the system has no Capital Finance Account for the household sector, and even the Capital Formation Account for the household enterprise sector has a number of different entries. The non-corporate institutions in developing countries follow traditional techniques of production and are not organized enough to maintain annual profit and loss accounts or balance sheets. As a result, a complete record of gross accumulation and its financing for these establishments is hard to obtain. Further, such institutions have households and individuals as the sole proprietors or partners and the sources of financial assets are either these proprietors and partners or financial intermediaries of traditional type. Neither these individual proprietors and partners nor the financial intermediaries maintain any systematic accounts. The Capital Finance Accounts for such enterprises are, therefore, of hardly any significance and even the Capital Formation Account may not be easy to construct.

2.10. The External Transactions Account proposed in the system is in the form of a single consolidated account for all the resident economic agents with the

rest of world and does not differ in detail from the one suggested in the SNA. However, for developing countries, the nature of exports and imports are different, the former including mainly primary products and the latter covering capital equipment and more sophisticated finished industrial products than those produced within the country. This would require detailed presentation of data on external trade (in the form of supporting tables) highlighting these aspects so that necessary steps may be taken for a more balanced export pattern and import substitution. Since most developing countries are expected to have detailed records of external transactions and the institutional and structural features of these countries are unlikely to affect the transactions with the rest of the world, it is hoped that the account of external transactions and the accompanying details can be presented without much difficulty.

2.11. The complete set of Accounts I and II and few illustrative accounts, for the sectors and branches suggested above are presented at the end as Annex II followed by a complete list of the Accounts.

2.12. As will be seen from the accounts, the transactions have been coded in a standard form. This not only helps in their identification but is necessary for the compilation of the data bank. Any economic analysis on the basis of the details contained in these accounts would require their storage over a period of time and subsequent retrieval and analysis, and their identification in the context of the total system. The coding is nothing but a process for the above purpose and is expected to help in standardizing the system. The coding is on the basis of transactors' account, class and categories of transactions and the sector to which the transactions refer. The listing of the class and categories of the transactions is generally on the same basis as in the SNA. However, this listing is preceded by the digit (first of the four digits appearing in the code number) indicating the sector to which the transactions belong—the number 0 referring to the transaction for the economy as a whole and 1, 2 and 3 referring to public, private corporate and household non-corporate sectors respectively. The subsequent three digits refer, as usual, to the transactors' account in which the given transaction is included and the class and category of a given transaction in sequential order. The fifth digit, if appearing, refers to the sub-category within the class of transaction, as in the SNA. The addition of one extra digit at the beginning is thus a departure from the SNA practice but is of significance for developing countries where complete disaggregation of accounts by types of economic activity is a very remote possibility. Besides, economic analysis for these countries quite often refers to particular sectors only and the possibility of identification of the transactor as well as the transaction makes the problem very much simpler particularly while retrieving the information from the data bank or ensuring correct storage.[1]

2.13. It might be useful in conclusion to mention briefly the main points of departure from the SNA. Though the framework remains essentially the same, the contents are often substantially different in terms of transactions and their

[1]The complete list of codes for classes and categories is available from Mrs. Uma Roy Choudhury, Central Statistical Organization, New Delhi, and will be supplied on request. The first digit for identification of the sector is introduced in the accounts only and does not appear in the list.

sub-categories, which again are not uniform for all sectors. As has already been mentioned, the first most important point of difference is the systematic distinction between goods (including material services) and non-material services. It is not only that the transactions within each of these categories are given in detail but all the inter-transactions between them are recorded for a complete picture. Next, the system proposes a uniform set of transactors for all accounts and classifies them into three broad groups which are mainly institutional in character. However, this classification also makes the important distinction between modern and traditional forms of production and even the transactions appearing are not uniform between transactors. Thus, for example, in the household non-corporate sector, compensation of employees has been sub-classified into "payment in cash" and "payment in kind." Similarly, aggregates like "gross product," "private final consumption expenditure" and "intermediate consumption" have been shown under the separate categories of "purchased/sold from/in the market" or "own production" or "bartered." None of these terms are unfamiliar and they need no explanation. However, such measures are important in the context of development planning and serve a useful purpose if measured and presented independently. Another more important transaction appearing as an item of factor incomes is "income of self-employed." For enterprises where ownership is confined to individuals and production is undertaken mainly by own labour of the proprietors with or without the aid of either unpaid family labour or wage labour, the income generated is not always distributed between the factors of production, *viz.*, capital and labour, except to the extent of payment of the employed labour. In such cases the total income generated, net of wage payments (in cash or in kind), is termed income of self-employed. This income would include both imputed labour income of own account workers and the operating surplus. In the Capital Formation Account similarly, gross domestic fixed capital formation is shown to include asset formation out of "own production" while saving is defined to occur in the form of increase in "financial assets" and "physical assets." Apparently these classifications are contrary to standard definitions. However, the sub-categorisations are mutually exclusive and refer to well defined boundaries. Thus, asset formation in the traditional sector and by the population can be in the conventional form as a result of purchase of goods of a capital nature from the market or purchase of newly constructed residential houses. Such additions to capital assets are classified as "purchased." In the unorganized sector, however, capital formation can also occur as a result of the use of own labour and materials which are either produced by these individuals themselves or are of no economic value and hence available freely. Examples of such asset formation are land improvement, minor irrigation projects and rural house construction by the use of materials like mud, straw, grass, etc. The value of capital formation in this case would consist of imputed value of own account labour employed together with imputed values of those materials, e.g., bamboo, that have recognized economic value. Such additions to capital stock would obviously have no market transactions and hence no corresponding financial measure. For a complete accounting, therefore, it is essential that such asset formation be also included as a part of saving of the unincorporated sector. The present sub-classification attempts to do this to the extent feasible.

2.14. The system thus is not only convenient for arriving at the final totals but is readily manageable, being presented in a simplified form with only a limited amount of essential details. The system again is built around a conceptual matrix and can be used for its ultimate integration with the SNA and hence with inter-industry transactions if the developing countries desire to do so. The presentation in a more concise form is attempted in Part III with such details as would assist in comprehending the economic functions of developing countries and their further analysis. Some details about manpower have been brought in at this stage. However, the system is not complete unless a fuller balance of manpower is formulated and integrated with the complete system. This is proposed to be taken up at the next stage of the study, together with the work on the framework of supporting tables. Considerable progress on the latter has, however, been made in India in the recent past in a seminar on national and regional accounts held in Mahabaleshwar in January 1973, and a simple system of accounts with supporting tables, known in India as Mahabaleshwar Accounts, is in the process of construction.

ANNEX I

A Symbolic Representation of Economic Accounts System for Developing Countries

					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRODUCTION	GOODS AND MATERIAL SERVICES	Public	Agriculture and mining	1	U_1	U_1	U_1	U_1	U_1	U_1	U_1	U_1		U_1			V_1	V_1	V_1	V_1		V_1	V_1	V_1	V_1		V_1		
			Manufacturing and construction	2	U_1	U_1	U_1	U_1	U_1	U_1	U_1	U_1		U_1			V_1	V_1	V_1	V_1		V_1	V_1	V_1	V_1		V_1		
			Transport of goods and communication	3	U_1	U_1	U_1	U_1	U_1	U_1	U_1	U_1		U_1			V_1	V_1	V_1	V_1		V_1	V_1	V_1	V_1		V_1		
			Distributive trade and storage	4	U_1	U_1	U_1	U_1	U_1	U_1	U_1	U_1		U_1			V_1	V_1	V_1	V_1		V_1	V_1	V_1	V_1		V_1		
		Private corporate	Agriculture and mining	5	U_1	U_1	U_1	U_1	U_1	U_1	U_1	U_1		U_1			V_1	V_1	V_1	V_1		V_1	V_1	V_1	V_1		V_1		
			Manufacturing and construction	6	U_1	U_1	U_1	U_1	U_1	U_1	U_1	U_1		U_1			V_1	V_1	V_1	V_1		V_1	V_1	V_1	V_1		V_1		
			Transport of goods and communication	7	U_1	U_1	U_1	U_1	U_1	U_1	U_1	U_1		U_1			V_1	V_1	V_1	V_1		V_1	V_1	V_1	V_1		V_1		
			Distributive trade and storage	8	U_1	U_1	U_1	U_1	U_1	U_1	U_1	U_1		U_1			V_1	V_1	V_1	V_1		V_1	V_1	V_1	V_1		V_1		
		Household non-corporate	Total	9																									
			Sold in the market	10	U_1	U_1	U_1	U_1	U_1	U_1	U_1	U_1		U_1			V_1	V_1	V_1	V_1		V_1	V_1	V_1	V_1		V_1		
			Bartered	11											U_{1b}													V_{1b}	
			Used for own consumption	12												U_{1c}													V_{1c}
	NON-MATERIAL SERVICES	Public	Passenger transport	13	U_2	U_2	U_2	U_2	U_2	U_2	U_2	U_2		U_2			V_2	V_2	V_2	V_2		V_2	V_2	V_2	V_2		V_2		
			Finance and insurance	14	U_2	U_2	U_2	U_2	U_2	U_2	U_2	U_2		U_2			V_2	V_2	V_2	V_2		V_2	V_2	V_2	V_2		V_2		
			Education, health and social services	15	U_2	U_2	U_2	U_2	U_2	U_2	U_2	U_2		U_2			V_2	V_2	V_2	V_2		V_2	V_2	V_2	V_2		V_2		
			Other services	16	U_2	U_2	U_2	U_2	U_2	U_2	U_2	U_2		U_2			V_2	V_2	V_2	V_2		V_2	V_2	V_2	V_2		V_2		
			Government administration	17																									
		Private corporate	Passenger transport	18	U_2	U_2	U_2	U_2	U_2	U_2	U_2	U_2		U_2			V_2	V_2	V_2	V_2		V_2	V_2	V_2	V_2		V_2		
			Finance and insurance	19	U_2	U_2	U_2	U_2	U_2	U_2	U_2	U_2		U_2			V_2	V_2	V_2	V_2		V_2	V_2	V_2	V_2		V_2		
			Education, health and social services	20	U_2	U_2	U_2	U_2	U_2	U_2	U_2	U_2		U_2			V_2	V_2	V_2	V_2		V_2	V_2	V_2	V_2		V_2		
			Other services	21	U_2	U_2	U_2	U_2	U_2	U_2	U_2	U_2		U_2			V_2	V_2	V_2	V_2		V_2	V_2	V_2	V_2		V_2		
		Household non-corporate	Total	22																									
			Sold in the market	23	U_2	U_2	U_2	U_2	U_2	U_2	U_2	U_2		U_2			V_2	V_2	V_2	V_2		V_2	V_2	V_2	V_2		V_2		
			Bartered	24											U_{2b}													V_{2b}	
			Used for own consumption	25												U_{2c}													V_{2c}

ANNEX I (continued)

					26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
PRODUCTION	GOODS AND MATERIAL SERVICES	Public	Agriculture and mining	1	C_1^p																										
			Manufacturing and construction	2	C_1^p																										
			Transport of goods and communication	3	C_1^p																										
			Distributive trade and storage	4	C_1^p																										
		Private corporate	Agriculture and mining	5	C_1^p																										
			Manufacturing and construction	6	C_1^p																										
			Transport of goods and communication	7	C_1^p																										
			Distributive trade and storage	8	C_1^p																										
		Household non-corporate	Total	9																											
			Sold in the market	10	C_1^p																										
			Bartered	11	C_{1b}^p																										
			Used for own consumption	12		C_{1c}^p																									
	NON-MATERIAL SERVICES	Public	Passenger transport	13			C_2^p																								
			Finance and insurance	14			C_2^p																								
			Education, health and social services	15			C_2^p																								
			Other services	16			C_2^p																								
			Government administration	17																											
		Private corporate	Passenger transport	18			C_2^p																								
			Finance and insurance	19			C_2^p																								
			Education, health and social services	20			C_2^p																								
			Other services	21			C_2^p		C_1^g	C_2^g	C_{2c}^g																				
		Household non-corporate	Total	22																											
			Sold in the market	23			C_2^p																								
			Bartered	24			C_{2b}^p																								
			Used for own consumption	25				C_{2c}^p																							

ANNEX I (continued)

					55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85
PRODUCTION	GOODS AND MATERIAL SERVICES	Public	Agriculture and mining	1					N_1	N_1	N_1	N_1	N_1	N_1	I_1	I_1	I_1	I_1	I_1	I_1														$\bar{Y}_1$	
			Manufacturing and construction	2					N_1	N_1	N_1	N_1	N_1	N_1	I_1	I_1	I_1	I_1	I_1	I_1														$\bar{Y}_1$	
			Transport of goods and communication	3					N_1	N_1	N_1	N_1	N_1	N_1	I_1	I_1	I_1	I_1	I_1	I_1														$\bar{Y}_1$	
			Distributive trade and storage	4					N_1	N_1	N_1	N_1	N_1	N_1	I_1	I_1	I_1	I_1	I_1	I_1														$\bar{Y}_1$	
		Private corporate	Agriculture and mining	5					N_1	N_1	N_1	N_1	N_1	N_1	I_1	I_1	I_1	I_1	I_1	I_1														$\bar{Y}_1$	
			Manufacturing and construction	6					N_1	N_1	N_1	N_1	N_1	N_1	I_1	I_1	I_1	I_1	I_1	I_1														$\bar{Y}_1$	
			Transport of goods and communication	7					N_1	N_1	N_1	N_1	N_1	N_1	I_1	I_1	I_1	I_1	I_1	I_1														$\bar{Y}_1$	
			Distributive trade and storage	8					N_1	N_1	N_1	N_1	N_1	N_1	I_1	I_1	I_1	I_1	I_1	I_1														$\bar{Y}_1$	
		Household non-corporate	Total	9					N_1	N_1	N_1	N_1	N_1	N_1	I_1	I_1	I_1	I_1	I_1	I_1														$\bar{Y}_1$	
			Sold in the market	10																													
			Bartered	11																													
			Used for own consumption	12																	I_{1c}												
	NON-MATERIAL SERVICES	Public	Passenger transport	13					N_2	N_2	N_2	N_2	N_2	N_2	I_2	I_2	I_2	I_2	I_2	I_2														$\bar{Y}_2$	
			Finance and insurance	14					N_2	N_2	N_2	N_2	N_2	N_2	I_2	I_2	I_2	I_2	I_2	I_2														$\bar{Y}_2$	
			Education, health and social services	15					N_2	N_2	N_2	N_2	N_2	N_2	I_2	I_2	I_2	I_2	I_2	I_2														$\bar{Y}_2$	
			Other services	16					N_2	N_2	N_2	N_2	N_2	N_2	I_2	I_2	I_2	I_2	I_2	I_2														$\bar{Y}_2$	
			Government administration	17																													
		Private corporate	Passenger transport	18					N_2	N_2	N_2	N_2	N_2	N_2	I_2	I_2	I_2	I_2	I_2	I_2														$\bar{Y}_2$	
			Finance and insurance	19					N_2	N_2	N_2	N_2	N_2	N_2	I_2	I_2	I_2	I_2	I_2	I_2														$\bar{Y}_2$	
			Education, health and social services	20					N_2	N_2	N_2	N_2	N_2	N_2	I_2	I_2	I_2	I_2	I_2	I_2														$\bar{Y}_2$	
			Other services	21					N_2	N_2	N_2	N_2	N_2	N_2	I_2	I_2	I_2	I_2	I_2	I_2														$\bar{Y}_2$	
		Household non-corporate	Total	22					N_2	N_2	N_2	N_2	N_2	N_2	I_2	I_2	I_2	I_2	I_2	I_2														$\bar{Y}_2$	
			Sold in the market	23																													
			Bartered	24																													
			Used for own consumption	25																		I_{2c}											

ANNEX I (continued)

						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
CONSUMPTION	EXPENDITURE	Population	Goods and material services	Purchased	26																									
				Own production	27																									
			Non-material services	Purchased	28																									
				Own production	29																									
		Government administration	Goods and material services		30																									
			Non-material services	Purchased	31																									
				Own production	32																									
	INCOME AND OUTLAY	Value added	Compensation of employees	Total	33																									
				Cash	34	W_1	W_1	W_1	W_1	W_1	W_1	W_1	W_1	W_1				W_2	W_2	W_2	W_2	W_2	W_2	W_2	W_2	W_2	W_2			
				Kind	35									W_{1k}													W_{2k}			
			Income of self employed		36									P_1													P_2			
			Operating surplus		37	R_1	R_1	R_1	R_1	R_1	R_1	R_1	R_1	R_1				R_2	R_2	R_2	R_2		R_2	R_2	R_2	R_2	R_2			
			Consumption of fixed capital		38	D_1	D_1	D_1	D_1	D_1	D_1	D_1	D_1	D_1				D_2	D_2	D_2	D_2		D_2	D_2	D_2	D_2	D_2			
			Indirect taxes, net		39	T_1	T_1	T_1	T_1	T_1	T_1	T_1	T_1	T_1				T_2	T_2	T_2	T_2		T_2	T_2	T_2	T_2	T_2			
		Forms of income	Wages and salaries	Total	40																									
				Cash	41	W_1	W_1	W_1	W_1	W_1	W_1	W_1	W_1	W_1				W_2	W_2	W_2	W_2	W_2	W_2	W_2	W_2	W_2	W_2			
				Kind	42									W_{1k}													W_{2k}			
			Employers' contribution		43	F_1	F_1	F_1	F_1	F_1	F_1	F_1	F_1	F_1				F_2	F_2	F_2	F_2	F_2	F_2	F_2	F_2	F_2	F_2			
			Income of self employed		44									P_1													P_2			
			Operating surplus		45	R_1	R_1	R_1	R_1	R_1	R_1	R_1	R_1	R_1				R_2	R_2	R_2	R_2		R_2	R_2	R_2	R_2	R_2			
			Property income		46																									
			Direct taxes on income		47																									
			Social security contributions		48																									
			Current transfers by enterprises		49																									
			Social security benefits		50																									
			Social assistance grants		51																									
			Other current transfers by government		52																									
			Current transfers by population		53																									
			Current transfers by rest of the world		54																									
		Sectors of receipt	Goods and material services		55																									
			Non-material services		56																									
			Government administration		57																									
			Population		58																									

							26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
CONSUMPTION	EXPENDITURE	Population	Goods and material services	Purchased	26																														
				Own production	27																														
			Non-material services	Purchased	28																														
				Own production	29																														
		Government administration	Goods and material services		30																														
			Non-material services	Purchased	31																														
				Own production	32																														
	INCOME AND OUTLAY	Value added	Compensation of employees	Total	33																														
				Cash	34																														
				Kind	35																														
			Income of self employed		36																														
			Operating surplus		37																														
			Consumption of fixed capital		38																														
			Indirect taxes, net		39																														
		Forms of income	Wages and salaries	Total	40																														
				Cash	41																														
				Kind	42																														
			Employers' contribution		43																														
			Income of self employed		44																														
			Operating surplus		45																														
			Property income		46																														
			Direct taxes on income		47																														
			Social security contributions		48																														
			Current transfers by enterprises		49																														
			Social security benefits		50																														
			Social assistance grants		51																														
			Other current transfers by government		52																														
			Current transfers by population		53																														
			Current transfers by rest of the world		54																														
		Sectors of receipt	Goods and material services		55																														
			Non-material services		56																														
			Government administration		57																														
			Population		58																														

W^p W_k^p F^p P^p R_1 M_1 R_2 M_2 M^g $\bar{T}^g$ $\bar{S}^g$ M^p $\bar{Z}^p$ B^p G^p Z^g Z^p Z^r

ANNEX I (continued)

						55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85
CONSUMPTION	EXPENDITURE	Population	Goods and material services	Purchased	26				C_1^p																										$\bar{Y}_1^p$
				Own production	27				C_{1c}^p																										
			Non-material services	Purchased	28				C_2^p																										$\bar{Y}_2^p$
				Own production	29				C_{2c}^p																										
		Government administration	Goods and material services		30				C_1^g																										
			Non-material services	Purchased	31				C_2^g																										
				Own production	32				C_{2c}^g																										
	INCOME AND OUTLAY	Value added	Compensation of employees	Total	33																												
				Cash	34																												
				Kind	35																												
			Income of self employed		36																												
			Operating surplus		37																												
			Consumption of fixed capital		38																										$-D_1$	$-D_2$	$-D^g$	$-D^p$		
			Indirect taxes, net		39																														
		Forms of income	Wages and salaries	Total	40																														W^r
				Cash	41																														
				Kind	42																														
			Employers' contribution		43																														F^r
			Income of self employed		44																														
			Operating surplus		45																														
			Property income		46	M_1	M_2	M^g	M^b																										M^r
			Direct taxes on income		47	$\bar{T}_1$	$\bar{T}_2$		$\bar{T}^b$																										$\bar{T}^r$
			Social security contributions		48				$\bar{S}^b$																										
			Current transfers by enterprises		49	$\bar{Z}_1$	$\bar{Z}_2$																												
			Social security benefits		50			B^g																											
			Social assistance grants		51			G^g																											
			Other current transfers by government		52			Z^g																											
			Current transfers by population		53				Z^b																										
			Current transfers by rest of the world		54																														Z^r
		Sectors of receipt	Goods and material services		55																														
			Non-material services		56																														
			Government administration		57																														
			Population		58																														

							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
ACCUMULATION	INCREASE IN STOCKS	Industries		Goods and material services	Public	59																									
					Private corporate	60																									
					Household non-corporate	61																									
				Non-material services	Public	62																									
					Private corporate	63																									
					Household non-corporate	64																									
	FIXED CAPITAL FORMATION	Industries	Purchased	Goods and material services	Public	65																									
					Private corporate	66																									
					Household non-corporate	67																									
				Non-material services	Public	68																									
					Private corporate	69																									
					Household non-corporate	70																									
			Own production	Household non-corporate	Goods and material services	71																									
					Non-material services	72																									
	CAPITAL FINANCE	Industrial capital formation		Construction		73																									
				Machinery and equipment		74																									
				Increase in stocks		75																									
		Capital transfers		All categories		76																									
		Financial assets		Currency and deposits		77																									
				Securities		78																									
				Other financial claims		79																									
		Sectors		Goods and material services		80																									
				Non-material services		81																									
				Government administration		82																									
				Population		83																									
Rest of the world				Current transactions		84	$\bar{Y}_1$	$\bar{Y}_1$	$\bar{Y}_1$	$\bar{Y}_1$	$\bar{Y}_1$	$\bar{Y}_1$	$\bar{Y}_1$	$\bar{Y}_1$	$\bar{Y}_1$				$\bar{Y}_2$	$\bar{Y}_2$	$\bar{Y}_2$	$\bar{Y}_2$	$\bar{Y}_2$	$\bar{Y}_2$	$\bar{Y}_2$	$\bar{Y}_2$	$\bar{Y}_2$	$\bar{Y}_2$					
				Capital transactions		85																									

							26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
ACCUMULATION	INCREASE IN STOCKS	Industries		Goods and material services	Public	59																													
					Private corporate	60																													
					Household non-corporate	61																													
				Non-material services	Public	62																													
					Private corporate	63																													
					Household non-corporate	64																													
	FIXED CAPITAL FORMATION	Industries	Purchased	Goods and material services	Public	65																													
					Private corporate	66																													
					Household non-corporate	67																													
				Non-material services	Public	68																													
					Private corporate	69																													
					Household non-corporate	70																													
			Own production	Household non-corporate	Goods and material services	71																													
					Non-material services	72																													
	CAPITAL FINANCE	Industrial capital formation		Construction		73																													
				Machinery and equipment		74																													
				Increase in stocks		75																													
		Capital transfers		All categories		76																													
		Financial assets		Currency and deposits		77																													
				Securities		78																													
				Other financial claims		79																													
		Sectors		Goods and material services		80																													
				Non-material services		81																													
				Government administration		82																													
				Population		83																													
Rest of the world				Current transactions		84	$\bar{Y}^r$		$\bar{Y}^p$												W^r			F^r			M^r						Z^r	$\bar{Z}^r$	
				Capital transactions		85																													

ANNEX I (concluded)

						55 56 57 58	59 60 61 62 63 64	65 66 67 68 69 70 71 72	73 74 75	76	77 78 79	80 81 82 83 84 85
ACCUMULATION	INCREASE IN STOCKS	Industries	Goods and material services	Public	59							
				Private corporate	60							
				Household non-corporate	61							
			Non-material services	Public	62							
				Private corporate	63							
				Household non-corporate	64							
	FIXED CAPITAL FORMATION	Industries — Purchased	Goods and material services	Public	65							
				Private corporate	66							
				Household non-corporate	67							
			Non-material services	Public	68							
				Private corporate	69							
				Household non-corporate	70							
		Industries — Own production	Household non-corporate	Goods and material services	71							
				Non-material services	72							
	CAPITAL FINANCE	Industrial capital formation	Construction		73							$I(c)_1$ $I(c)_2$ $I(c)^g$ $I(c)^p$ $I(m)_1$ $I(m)_2$ $I(m)^g$ N_1 N_2 N^g
			Machinery and equipment		74							
			Increase in stocks		75							
		Capital transfers	All categories		76							
		Financial assets	Currency and deposits		77							J_1 J_2 J^g J^p J^r K_1 K_2 K^g K^p K^r L_1 L_2 L^g L^p L^r
			Securities		78							
			Other financial claims		79							
		Sectors	Goods and material services		80	S_1				$\bar{I}_1$	J_1 K_1 L_1	
			Non-material services		81	S_2				$\bar{I}_2$	J_2 K_2 L_2	
			Government administration		82	S^g				$\bar{I}^g$	J^g K^g L^g	
			Population		83	S^p				$\bar{I}^p$	J^p K^p L^p	
Rest of the world			Current transactions		84							
			Capital transactions		85					$\bar{I}^r$	$\bar{K}^r$ $\bar{K}^r$ $\bar{K}_r$	

Notations Used in Economic Accounts for Developing Countries

1. The following gives the notations used in the conceptual matrix elaborating the Economic Accounts for Developing Countries. A few common features of the notations are mentioned first with explicit references, if any, being made in the list itself. These features refer to the subscripts and superscripts used in the notations and signify the following:

(a) subscripts 1 and 2 added to any notation refer respectively to activities in the material sphere and non-material sphere. The absence of the subscript denotes total for the economy. Subscripts in the form of "*b*" "*c*" and "*k*" added to 1 and 2 refer to "barter," "for own consumption" and "in kind" respectively. Production used for own consumption is equivalent to consumption of own production and hence the latter is also indicated by subscript "*c*." Absence of any such subscript suggests cash transactions.

(b) superscripts "*p*" "*g*" and "*r*" refer to transactions in the institutional sectors of "population," "government administration" and "rest of the world" respectively.

2. The following gives the details of the notations used. A few of the subscripts and superscripts are exemplified for clarification.

U: intermediate use by branches producing material goods; U_1, of material goods; U_2, of non-material services

V: intermediate use by branches producing non-material services

C: final consumption in the domestic market

S: saving

N: increase in inventories

I: fixed capital formation; $I(c)$, in construction and $I(m)$, in machinery and equipment

K: capital transactions with the rest of the world

D: consumption of fixed capital

E: exports; E_1, of goods and material services, E_2, of non-material services

X: imports

$\bar{Y}$: current transactions with the rest of the world

W: compensation of employees; W_{1k}, in kind in material sphere, W_{2k}, in kind in non-material sphere

w: wages and salaries

F: employers' contribution

P: income of self-employed

R: operating surplus

M: property income

T: indirect taxes, net

$\bar{T}$: direct taxes on income

$\bar{S}$: social security contributions

$\bar{Z}$: current transfers (by enterprises)

B: social security benefits

G: social assistance grants

Z: other current transfers

J: currency and deposits
K: securities
L: other financial claims
I: capital transfers.

ANNEX II

SYSTEM OF ECONOMIC ACCOUNTS: SELECTED ILLUSTRATIONS

I. CONSOLIDATED ACCOUNTS OF THE NATION

Account 1: Gross Domestic Product and Expenditure

0.1.3.3	Compensation of employees	4.2.2.20	Govt. final consumption expenditure
	1. in cash	5.2.2.30	Private final consumption expenditure
	2. in kind		1. purchased from market
0.1.3.6	Operating surplus		2. from own production
0.1.3.9	Income of self employed	0.4.2.12	Increase in stocks
0.1.3.12	Consumption of fixed capital	0.4.2.9	Gross fixed capital formation
0.1.3.15	Indirect taxes	0.1.2.15	Exports of goods and services
0.1.3.16	*Less* Subsidies	0.1.1.10	*Less* imports of goods and services
	Gross domestic product		Expenditure on gross domestic product

Account 3: National Disposable Income and its Appropriation

4.3.2.20	Govt. final consumption expenditure	0.3.3.3	Compensation of employees
			1. in cash
			2. in kind
5.3.2.30	Private final consumption expenditure	0.3.4.4	Compensation of employees from the rest of the world
	1. purchased from market		
	2. from own production	0.3.3.6	Operating surplus
0.3.7.1	Saving	0.3.3.9	Income of self employed
	1. financial	0.3.4.19	Property and entrepreneurial income from the rest of the world, net
	2. physical		
		0.3.3.15	Indirect taxes
		0.3.3.16	*Less* Subsidies
		0.3.6.27	Other current transfers from the rest of the world, net
	Appropriation of disposable income		Disposable income

Account 5: Capital Finance

0.5.2.12	Increase in stocks	0.5.7.1	Saving
0.5.2.9	Gross fixed capital formation		1. financial 2. physical
0.5.7.8	Purchase of intangible assets n.e.c. from the rest of the world, net	0.5.3.12	Consumption of fixed capital
0.5.7.19	Net lending to the rest of the world	0.5.7.12	Capital transfers from the rest of the world
0.5.7.13	Capital transfers paid to the rest of the world		
	Gross accumulation		Finance of gross accumulation
0.5.8.0	Net acquisition of financial assets	0.5.7.16	Net lending to the rest of the world
		0.5.9.0.	Net incurrence of liabilities
	Net acquisition of financial assets		Net incurrence of liabilities plus net lending to the rest of the world

Account 6: All Accounts—External Transactions

	Current Transactions		
0.6.2.15	Exports of goods and services	0.6.1.10	Imports of goods and services
0.6.4.4.	Compensation of employees from the rest of the world, net	0.6.6.21	Other current transfers to the rest of the world
0.6.4.19	Property and entrepreneurial income from the rest of the world, net	0.6.7.5	Surplus of the nation on current transactions
0.6.6.24	Other current transfers from the rest of the world		
	Current receipts		Disposal of current receipts
	Capital Transactions		
0.6.7.4	Surplus of the nation on current transactions	0.6.7.8	Purchases of intangible assets n.e.c. from the rest of the world, net
0.6.7.12	Capital transfers from the rest of the world	0.6.7.13	Capital transfers to the rest of the world
0.6.9.0	Net incurrence of foreign liabilities	0.6.8.0.	Net acquisition of foreign financial assets
	Receipts		Disbursements

Accounts 1, 2 and 4: Production, Consumption and Capital Formation
A. Goods and material services

Supply of goods and material services		Use of available goods and material services	
Domestic product		Intermediate consumption, producers of goods and material services	
1.1.1.1	Public sector	1.1.2.1	Public sector
2.1.1.1	Private corporate sector	2.1.2.1	Private corporate sector
3.1.1.1	Household non-corporate sector	3.1.2.1	Household non-corporate sector
0.1.1.11	Imports of goods and material services	Intermediate consumption, producers of non-material services in	
		1.1.2.2	Public sector
		2.1.2.2	Private corporate sector
		3.1.2.2	Household non-corporate sector
		Final consumption of population in domestic market from	
		1.2.2.5	Public sector
		2.2.2.5	Private corporate sector
		3.2.2.5	Household non-corporate sector
		4.2.2.7	Final consumption of government services in domestic market
		0.4.2.10	Gross fixed capital formation
		0.4.2.13	Increase in stocks
		0.1.2.16	Exports of goods and material services

Account 1, 2 and 4: Production, Consumption and Capital Formation
B. Non-material services

Supply of non-material services	Use of available non-material services
Non-material services for sale from	Intermediate consumption, producers of goods and material services in
1.1.1.4.1 Public sector*	1.1.2.3 Public sector
2.1.1.4.1 Private corporate sector	2.1.2.3 Private corporate sector
3.1.1.4.1 Household non-corporate sector	3.1.2.3 Household non-corporate sector
Non-material services for own use in	Intermediate consumption, producers of non-material services in
1.1.1.4.3 Public sector*	1.1.2.4 Public sector
3.1.1.4.3 Household non-corporate sector†	2.1.2.4 Private corporate sector
0.1.1.12 Direct purchases abroad on current account, producers of non-material services	3.1.2.4 Household non-corporate sector
	Final consumption expenditure in domestic market, population from
	1.2.2.6 Public sector
	2.2.2.6 Private corporate sector
	3.3.3.6 Household non-corporate sector
	4.2.2.8 Final consumption expenditure in domestic market, government services
	0.1.2.17 Direct consumption of services by rest of the world

*including government services
†non-profit services to population

Account 1: Production Account
A-1: Branches and sectors in goods and material services: Public sector industries

1.1.2.1	Intermediate consumption of goods and material services	1.1.1.2	Gross product of goods
1.1.2.3	Intermediate consumption of non-material services	1.1.1.3	Gross product of material services
1.1.3.4	Compensation of employees		
	(i) Wages and Salaries of population		
	(ii) Employers' contribution to social security, pension, welfare funds etc.		
	(iii) Wages and Salaries of foreign experts		
1.1.3.7	Operating surplus		
1.1.3.13	Consumption of fixed capital		
1.1.3.16	Indirect taxes		
1.1.3.19	*Less* Subsidies		
	Gross input		Gross output

Account 1 (continued)
A-3: Branches and sectors in goods and material services: household non-corporate sector

3.1.2.1	Intermediate consumption of goods and material services	3.1.1.1	Gross product
	1. purchased from market		1. sold in the market
	2. own production		2. bartered
			3. used for own consumption†
3.1.2.3	Intermediate consumption of non-material services		
3.1.3.4	Compensation of employees paid		
	1. in cash		
	2. in kind		
3.1.3.10	Income of self employed*		
3.1.3.13	Consumption of fixed capital		
3.1.3.16	Indirect taxes		
3.1.3.19	*Less* Subsidies		
	Gross input		Gross output

*includes operating surplus of the enterprises
†includes both intermediate consumption of enterprises and final consumption of population

Account 1 (continued)
B-3: Branches and sectors in non-material services: household non-corporate sector

3.1.2.2 Intermediate consumption of goods and material services	3.1.1.4 Gross product
3.1.2.4 Intermediate consumption of non-material services	1. sold in the market
1. purchased from market	2. bartered
2. own production	3. produced for own consumption†
3.1.3.5 Compensation of employees paid	
1. in cash	
2. in kind	
3.1.3.11 Income of self employed*	
3.1.3.14 Consumption of fixed capital	
3.1.3.17 Indirect taxes	
3.1.3.20 *Less* Subsidies	
Gross input	Gross output

*includes operating surplus
†includes both intermediate consumption of enterprises and final consumption of population

IV. Consumption Expenditure

Account 2: Final Consumption
D-5: Population

Final consumption of goods and material services in domestic market from	5.2.2.31 Final consumption of population* in goods and material services
1.2.2.5 Public sector	1. purchased
2.2.2.5 Private corporate sector	2. own production
3.2.2.5 Household non-corporate sector	5.2.2.32 Final consumption of population* in non-material services
Final consumption of non-material services in domestic market from	1. purchased
1.2.2.6 Public sector	2. own production
2.2.2.6 Private corporate sector	
3.2.2.6 Household non-corporate sector	
5.2.1.13 Direct purchase from abroad of goods and material services	
5.2.1.14 Direct purchase from abroad of non-material services	
Supply	Use

*Resident and non-resident

Account 3: Income and Outlay
A-3: Branches and sectors in goods and material services: household non-corporate sector

	Disbursements		Receipts
3.3.4.15	Entrepreneurial income withdrawn by owners	3.3.4.7	Income of self-employed withdrawn
3.3.4.10	Property income 1. Interest 2. Rents and royalties	3.3.4.13	Property income 1. Interest 2. Rents and royalties 3. Dividends
3.3.6.2	Direct taxes	3.3.6.19	Current transfers from other sectors
3.3.6.8	Fines and penalties		
3.3.6.22	Current transfers and other payments n.e.c.	3.3.6.13	Current grant receipts from general government
3.3.7.2	Savings 1. Financial 2. Physical	3.3.5.14 3.3.6.25	Insurance claims, net Other receipts and other current transfers n.e.c.

Account 4: Capital Formation Account
A-3: Branches and sectors in goods and material services: household non-corporate sector

	Gross accumulation		Finance of gross accumulation
3.4.2.10	Gross domestic fixed capital formation 1. purchased 2. own production	3.4.7.2	Saving 1. financial 2. physical
3.4.2.13	Increase in inventories	3.4.3.13	Consumption of fixed capital
3.4.7.6	Purchase of land, net	3.4.7.14	Capital transfers from other sectors, net
3.4.7.10	Increase of other physical assets n.e.c., net 1. purchased 2. own production	3.4.7.17	Borrowing

	Disbursement		Receipts
5.3.2.31	Final consumption expenditure of goods and material services 1. purchased 2. own production	5.3.4.2	Wages income of population from production of goods and material services 1. in cash 2. in kind
5.3.2.32	Final consumption expenditure of non-material services 1. purchased 2. own production	5.3.4.3	Wages income of population from production of non-material services 1. in cash 2. in kind
5.3.4.9	Property income (i) consumer debt interest (ii) others	5.3.4.5	Pensions, allowances etc. received by population
5.3.6.1	Direct taxes 1. on income 3. not elsewhere classified	5.3.4.12	Property income: 3. rent 4. others
5.3.6.7	Compulsory fees, fines and penalties	5.3.4.6	Income withdrawn by self-employed
5.3.6.10	Social security contributions	5.3.6.11	Social security benefits
5.3.6.21	Current transfers n.e.c.	5.3.6.12	Social assistance grants
5.3.7.1.	Saving 1. financial 2. physical	5.3.6.24	Other current transfers and receipts n.e.c.

List of Accounts for Developing Countries

I. *Consolidated accounts of the nation*
Gross domestic product and expenditure—Account 1.
National disposable income and its appropriation—Account 3.
Capital finance—Account 5.
External Transactions—Account 6.

II. *Supply and disposition of goods and services*
A. goods and material services—Accounts 1, 2 and 4.
B. non-material services—Accounts 1 and 2.

III. *Domestic production*
A-1: Branches and sectors in goods and material services: public sector—Account 1.
A-2: Branches and sectors in goods and material services: private corporate sector—Account 1.
A-3: Branches and sectors in goods and material services: household non-corporate sector—Account 1.
B-1: Branches and sectors in non-material services: public sector—Account 1.
B-2: Branches and sectors in non-material services: private corporate sector—Account 1.
B-3: Branches and sectors in non-material services: household non-corporate sector—Account 1.

IV. *Consumption expenditure*
C: General government—Account 2.
D: Population—Account 2.

V. *Income and outlay and capital finance*

A-1: Branches and sectors in goods and material services public sector—Account 3 and Account 5.

A-2: Branches and sectors in goods and material services: private corporate sector—Account 3 and Account 5.

A-3: Branches and sectors in goods and material services: household non-corporate sector—Account 3 and Account 4.

B-1: Branches and sectors in non-material services: public sector—Account 3 and Account 5.

B-2: Branches and sectors in non-material services: private corporate sector—Account 3 and Account 5.

B-3: Branches and sectors in non-material services: household non-corporate sector—Account 3 and Account 4.

C: General government—Account 3 and Account 4.

D: Population—Account 3.

PART III: ON THE USES OF ECONOMIC INFORMATION IN DEVELOPING COUNTRIES

3.1. We have given sufficient indication in Part I of our paper that our interest in EADC springs from practical needs of developing countries and not from just the formal requirement of a cogent set of data. The accounting system for a developing country should supply information enabling us to tackle some of the problems discussed earlier. In what follows, we do not consider the problems of short period balancing and short period projection, because the system just outlined in the previous part permits this not only globally but also in markets that are relevant for developing countries. Further, this particular use of national accounts is not peculiar to developing countries. Short period management of the economy is necessary for all countries, and this is particularly important for developing countries in which faulty planning measures intended for achieving some distant goals may lead to serious short period imbalances. And such imbalances require playing with a system of national accounts for devising appropriate counter measures.

3.2. When we focus our attention on problems peculiar to developing countries, we observe that frequently the information supplied by EADC has to be supplemented by various bodies of supplementary information. We shall introduce such information as we proceed considering different problems.

3.3. Before we proceed further, some remarks on the accuracy of information are called for. The customary systems of national accounts lay great emphasis on very detailed information pertaining to different points of time, and in view of this, inadequate attention is paid to the accuracy of an entry at different points of time. This is permissible only on the assumption that the entries actually represent the relevant population parameters. But this ideal state of affairs is too much to hope for and the actual entries are always subject to non-sampling error and suffer also from sampling error when they are based on incomplete information about the population. Consequently, the estimates at two points of time may not enable us to decipher whether they are different and by how much. Such deciphering,

however, is essential for any proximate use of the information, and more reliance should be placed on entries at a level of aggregation where such deciphering is possible. Such deciphering, today, need not be based on a full analysis of the errors involved; one should not, however, feel satisfied unless there is a reasonable consensus among the producers of data and analysts.

3.4. The problems we propose to discuss are listed below:

(i) social perspective and non-economic constraints,
(ii) inter-industry analysis and the treatment of non-material services,
(iii) optimizing models and long period planning,
(iv) disparity of size distribution and its equalization,
(v) labour productivity, skilled man-power and man-power planning,
(vi) public sector and allocation coefficients, and
(vii) non-monetization, money market and financing.

While all the ancillary data needed for considering these problems will be described in appropriate paragraphs, the bulk of the information to be used has been summarized in the interflow table appended below. This table together with the accounting system presented earlier cover our universe of information more or less completely, with only the proviso that the classifications in the interflow table are very aggregative and permit considerable sub-classification.

3.5. *Social perspective and non-economic constraints*: The most important problem confronting developing countries is how to improve their rate of growth. It is generally admitted that economics, narrowly defined, can only examine certain aspects of the problem and cannot comprehend its totality. In other words, economics can deal with economic constraints of growth which may not even be basic in many cases. The main shortcoming appears to be an absence of a social perspective in most countries, little conscious thinking being given to the type of society that is being aspired after. This is not surprising because of the absence of such perspectives in advanced countries apart from the desire of the relatively less developed among them to attain the consumption standard of the more developed ones. Unfortunately the socialist countries are also not immune to this worldwide quest for the improvement of the consumption standard.

3.6. In the absence of social goals, the economic targets appear mechanical and their fulfilment or otherwise remains unimportant to the society, by and large. But even when economic goals are set up and seriously pursued, failures frequently arise not because of the inadequacy of the economic calculations behind the development programmes but due to improper understanding of the socio-political set up in which the development has to take place. While economic calculations centre around capital and current inputs, the major bottlenecks remain skills and ability to manage. In fact, the so-called modern management devised after the experiences of advanced countries remains the principal source of failure in many projects because it is alien to the socio-political set-up of the developing countries, having little understanding of the people who work in factories and offices. But despite these difficulties, long period planning is necessary for developing countries, and any economic information system has to meet its demands.

3.7. *Interindustry analysis and the treatment of non-material services*: Since most of the planning models, of the consistency as well as of the optimization

INTERFLOW TABLE

	Used as Input in				Used for consumption			Used for Capital Formation			
	(1)	2(i)	2(ii)	(3)	h.h. Own Prod.	h.h. Pur-chased	Govt.	(1)	2(i)	2(ii)	(3)
1	2	3	4	5	6	7	8	9	10	11	12
A. *Production*											
1. corp. and reg. (i) goods											
(ii) services											
2. govt. (i) goods											
(ii) services											
3. household (i) goods											
(ii) services											
B. Value added paid out											
C. Physical assets from (1)											
Physical assets from (2)											
Physical assets from (3)											
D. Financial assets from (1)											
Financial assets from (2)											
Financial assets from (3)											
E. Lending to (1)											
Lending to (2)											
Lending to (3)											
F. Imports (i) fixed assets											
(ii) inputs											
(iii) cons. goods											
G. Total outgoings											
H. Labour force (i) skilled											
(ii) unskilled											
RTW (i) fixed assets											
(ii) inventories											
I. (i) value added to rich											
(ii) value added to poor											
(iii) no. of rich h.h.											
(iv) no. of poor h.h.											

INTERFLOW TABLE (cont.)

	Exports		Financial Assets		Borrowing		Total Incomings	Cons. Exp. By		Retained Prod.	
	Primary	Non-primary	Dom.	Foreign	Dom.	Foreign		Rich	Poor	Input	Cap. Formation
1	13	14	15	16	17	18	19	20	21	22	23
A. Production											
1. corp. and reg. (i) goods											
(ii) services											
2. govt. (i) goods											
(ii) services											
3. household (i) goods											
(ii) services											
B. Value added paid out											
C. Physical assets from (1)											
Physical assets from (2)											
Physical assets from (3)											
D. Financial assets from (1)											
Financial assets from (2)											
Financial assets from (3)											
E. Lending to (1)											
Lending to (2)											
Lending to (3)											
F. Imports (i) fixed assets											
(ii) inputs											
(iii) cons. goods											
G. Total outgoings											
H. Labour force (i) skilled											
(ii) unskilled											
RTW (i) fixed assets											
(ii) inventories											
I. (i) value added to rich											
(ii) value added to poor											
(iii) no. of rich h.h.											
(iv) no. of poor h.h.											

types, make extensive use of input coefficient matrices for their formulation, it is necessary to start with a consideration of input-output analysis. Before going into its technicalities, let us examine the classification of industries adopted by us and its relevance for developing countries. The production account is disaggregated into three parts : corporate (and registered), government, and household. While the corporate and public sectors possess a common feature, *viz.*, they make use of more modern techniques which are relatively more capital intensive, the household sector comprises small scale enterprises using labour intensive techniques and they are frequently of a traditional type. The sub-classification of enterprises using modern technology into two ownership classes, private corporate and public, has important bearings in the case of mixed economies that prevail in developing countries and this aspect of the problem will be considered subsequently. The overall classification adopted is, therefore, intended to bring out the pluralistic nature of the economy, both from the point of view of the use of different technologies and from the point of view of motivation for production.

3.8. For a detailed inter-industry analysis, the three main sectors may be further subdivided into a number of main industries in each sector and as we have mentioned in Part II, the number of industries in each sector should not be large in developing countries. Observe that a particular industry can appear twice or three times in the inter-industry table by virtue of ownership even if it has the same characteristic product. Another important feature is that when a commodity is, in practice, produced by different techniques (as opposed to only one in the usual analysis), we can accommodate them by setting up one industry for each of these techniques in the appropriate major sectors.

3.9. We propose to make a further sub-division in the inter-industrial flows. This is to accommodate the classification of commodities between goods and material services and non-material services. For our purpose, we shall assume that each industry produces one good and some non-material services. This type of classification is possible only when the entries are in terms of value. Since government services form a significant part of the public sector, our disaggregation of sector 2 into 2(i) and 2(ii) implies a separation of the government sector into public enterprises and general government activities. This is not only interesting for its own sake but it plays an important role in obtaining the required technology matrices.

3.10. In our case, we have three goods corresponding to the three sectors and non-material services, giving $n = 4$. Since the general government services has been recognized as a sector, we have $m = 4$. In this case, we have $m = n$ and can use the commodity technology assumption to obtain the required commodity and industry technology matrices. Retaining the property of m being equal to n, we can rearrange the flows in the inter-industry transactions. We can separate the non-material services from the household sector which correspond to those in the general government sector, e.g., health and educational services, etc., and merge them into a single sector. The above treatment can then be given to the altered matrix.

3.1. *Optimizing models and long term planning*: The interindustry transactions table forms the basis of disaggregated optimization models together, of course, with adequate information about sectoral stocks of capital. The data in the

interflow table can be used for analysis based on simple dynamic input-output models. The matrix provides the capital stocks of various goods in each industry at the end of the particular period or in the beginning of the next period. One has to differentiate between the stocks of current goods and the stocks of capital goods held by each industry. In the interflow table, we have merged these for the sake of space, but the capital matrix can easily be presented separately for fixed assets and inventories.

3.12. Suppose S_{ij} denotes the stock of ith industry's product held by the jth industry. If X_j represents the total output of the jth industry then $K_{ij} = S_{ij}/X_j$ gives the capital coefficient. Under the dynamic set up, at the beginning of each period, there is the problem of allocation of total output to stocks and current consumption. The future stream of outputs depends on this allocation to a large extent. At any point of time, let $E_t + \Delta S_t$ denote the final demand vector. Then

$$X_t \geq (I - A)^{-1}(E_t + \Delta S_t).$$

Using the capital coefficient matrix, we have

$$S_t \geq K(I - A)^{-1}(E_t + \Delta S_t)$$

where S_t denotes the vector of capital stocks at the beginning of the period t.

3.13. At this stage, we can recognize a possible choice among different $(E_t + \Delta S_t)$ vectors which satisfy the constraints imposed upon by the available capital stock. This type of simplified analysis is permitted by the data provided by the interflow table. However, one can think of using it for more disaggregated models, using other information presented in the table. For example, the information on external transactions in the shape of imports of current and capital goods can be fed in the model, leading to more alternatives at each stage.

3.14. Till now, we have focused our attention on the determination of the set of alternatives in a dynamic model which is otherwise deterministic in nature. Let us now turn to the problem of choice among available alternatives. In most of the optimizing models, this is done by specifying an objective function and an alternative which maximizes (or minimizes) the value of the objective function is chosen. Our interflow table provides data for analysing some interesting yet unexplored objective functions.

3.15. *Disparity of size distribution and its equalization*: We have stressed the problem of income inequality earlier, and we shall first try to introduce income distribution in the objective function. The usual models try to maximize the present value of a stream of consumption expenditures $E_0, E_1, \ldots, E_T$. If λ is the discounting factor, the objective function is given by

$$\phi = \sum_{t=0}^{T} E_t(1 - \lambda)^{-t}.$$

In some cases, we maximize the utility attached to a consumption stream and in all cases we only use aggregate consumption.

3.16. One simple way of introducing the problem of disparity is to bring the distribution aspect directly into the objective function. For each period t, the matrix provides distribution of E_t into different size classes. Let $E_{1t}, E_{2t}, \ldots, E_{kt}$

show the consumption belonging to k size classes. In such a case, we may consider a simple weighted average of E_{jt} $(j = 1, 2, \ldots, k)$ say $\bar{E}_t$, to replace E_t in the above objective function. By manipulating the weights suitably, one can obtain a consumption stream which is more egalitarian in nature. But this can be accomplished only at the cost of complicating the otherwise simple model to a considerable extent. Further, since the marginal propensity to consume is observed to be very high in lower income brackets, more equal distributions may result in lower levels of savings and hence investments and this may have an adverse effect on the future income streams. Consequently, some constraints on total savings have to be introduced.

3.17. The above objective function with $\bar{E}_t$ can be justified in the following way. Suppose each individual possesses a utility function which is concave and satisfies other regularity conditions. In this case one unit increment in income or consumption has different effects on utility depending on the income or consumption level at which it is added. Under this set-up, given E_t, a more equal distribution of E_t leads to a higher level of aggregate utility even if we treat all individuals equally and thus avoid the complication of interpersonal comparison of utilities. This is reflected in the above objective function, which is simple and straightforward. We can think, further, of more complicated utility functions in terms of utility maximization.

3.18. However, we can use the data on distribution given in the columns for industries in the interflow table in a simpler way without going into the technicalities of these models. It is customary to give value added in each sector in national accounts. But our table provides sectorwise distribution of this added value. After choosing a proper measure of inequality, we can identify sectors which have more egalitarian distributions. Suppose we are interested in increasing the total final demand by a particular percentage. Obviously, there are infinitely many final demand vectors satisfying this constraint. One may choose a final demand vector x which leads to a minimum value of $\sum_{i=1}^{M} w_i(x)\, I_i\,(x)$ where I_i shows the level of inequality and w_i shows the share of the ith sector in the total output. In the case of multiple solutions, the choice of the final demand can be made on the basis of other considerations. It should be stressed here that while previously we have been considering the distribution of income as received, here we consider the corresponding distribution as produced. While a produced unequal distribution can be made more equal by public redistributive measures, it will surely be a help when the distribution produced is itself reasonably equal.

3.19. This type of analysis has to be modified in the case when there is joint production. This introduces fresh complications into the system. Due to the presence of joint production, even a single final demand vector may lead to different output vectors. This leads to a widened set of feasible output vectors and the choice has to be made out of a bigger feasible set.

3.20. The above analysis has some interesting implications. First, by introducing the inequality considerations into objective functions, the models have a built in tendency to move towards an equal distribution. Second, in the case of a mixed economy, the government can make use of the sectorwise information on inequalities in appropriate control policies. The government may encourage industries generating more equal distributions. For example, the government may

decide to encourage labour intensive small scale industries the added value of which is more evenly distributed among earners. As we have already mentioned, the monetary and fiscal redistributive measures for combating inequality could be more efficient within a production policy framework of the type sketched above.

3.21. *Labour productivity, skilled manpower and manpower planning*: Till now, we have studied the capital transactions recorded in the matrix and made only a passing reference to earners. We propose now to study some main features of labour. It is useful to provide figures relating to labour employed in each sector. This gives the average productivity of labour which can be used along with the capital-output ratios in highly aggregative models. Apart from this, appropriate data on labour could be of use for analysing some problems of developing countries.

3.22. For example, we may think of differentiating classes of labour according to some criterion, like the level of technical knowledge, standard of health, etc. It is known that skilled manpower is in short supply in these countries while unskilled labour is abundant, resulting in import of highly specialized manpower from advanced countries. Under such circumstances, a part of the labour could be treated in the same manner as capital. In many cases, the non-availability of skilled labour leads to constraints on the capacity of a sector. In such cases, arrangements may be made for special training in such skills or recruiting of skilled labour. This is similar to acquiring new capital goods which leads to higher capacity. Thus then is a problem of allocation of funds between capital goods and skilled manpower. We may try to incorporate this in a simple dynamic model considered in the previous section.

3.23. In the above discussion, attention is certainly focused on the alternatives open to particular sectors for the improvement in the situation. But the government may be interested in producing the required skills through a suitable educational policy. In such a case, the government has to analyze the structure of education and flows involved there. This can be done by using appropriate population accounting matrices on lines suggested by Stone.

3.24. The government as well as the other sectors may try to increase labour productivity by measures other than those suggested above. More equal distribution of incomes supported by public expenditure on the improvement of social conditions and other welfare measures may lead to higher labour productivity. Analysis of this is feasible using the accounts of the general government.

3.25. *Public sector and allocation coefficients*: There are two major implications of the sectoral classification considered in the interflow table. We consider here the classification of industries by ownership into two broad groups: private and public.

3.26. First, in a mixed economy, we find that many commodities are produced by both public and private enterprises. In such a case, it is necessary to decide which part of the final demand should be met by a particular sector. This necessitates a study of the relative efficiencies of the two sectors. But such a study is not possible in the usual inter-industrial framework in which industry classification by ownership types is not used. But the classification is important for policy uses in countries which use planning for growth; the government may make use of

the above information in arriving at plan outlays concerning the private and public sectors.

3.27. Second, in the usual inter-industrial analysis, we assume that all the transactions are governed by technical considerations. But this is, in general, not true. It may so happen that some industries could not have obtained more than a particular amount of some goods. In this case there is no justification for considering these flows to be technical. We, therefore, need a special study which can be undertaken using the interflow table. Let us assume that some products are scarce and the enterprises cannot get any amount they demand. Let us assume that such goods are produced by only public enterprises and that these goods are allocated to all the industries out of considerations which are not necessarily technological in nature. But such a process of allocation is not possible for products of private enterprises since the transactions in this case are decided in the open market and cannot be treated as allocations.

3.28. One immediate problem that crops up is that we cannot find output vectors satisfying any arbitrary final demand vector. Given the allocations, the industries using these products will have capacity constraints which will have a chain of reactions. An algebraic exercise with this set-up suggests the following aspects about which one has to be cautious:

(i) We cannot prove the existence of an output vector corresponding to every final demand vector. Hence we can only talk about final demand vectors that satisfy some consistency requirements.

(ii) We have to make some solvability assumptions in arriving at the output vector for the first n_1 industries which allocate their products.

However, the above two points may not prove too restrictive in the following sense. If we assume that the allocation ratios are arrived at in a rational way by examining the structure of technologies used in various industries, then most of the consistency requirements are automatically satisfied. In view of this, the set-up suggested may be used in developing countries for devising their physical control and allocation policies on rational grounds. Such policies have frequently to be adopted, in any case, on grounds of scarcity of particular commodities.

3.29. *Non-monetization, money market and financing of development*: We may, finally, consider some special features of the monetary system in developing economies and the problem of financing of development. The subject is important because of the simultaneous presence of a modern sector, traditional financing organizations and non-monetized flows of several types. Even when production and technological data are available and feasible development programmes are drawn up on rational considerations, it is still necessary to consider the problems of money supply and financing of various projects in the public and private sectors. A balanced plan in terms of physical variables can go wrong with inflationary consequences simply because of some mistakes made in the monetary and financial fronts. We have no answer here by way of a solution to this problem, and all we have attempted in the accounts and in the interflow table is to keep distinct the variables that are relevant for an analysis of the problem.

3.30. Any reasonable measure of aggregate output of most developing countries has to include many non-transaction components, largely use of own products as inputs and assets in own enterprise or for consumption in the

household that owns the enterprise. Logically, therefore, when we do not split the same household enterprise by industries, the diagonal elements of the inter-industry coefficient matrix have two components, $a_{ij(b)}$ and $a_{ij(w)}$, the first corresponding to the flow within an industry but between different units but the second, within the same unit. When the same household enterprise is split up into different industries, say agriculture and small enterprise, there could be similar off-diagonal elements, $a_{ij(b)}$ and $a_{ij(w)}$. The point to note is that the purely within-unit coefficients, $a_{ii(w)}$ and $a_{ij(w)}$, have little role to play in interindustrial analysis of the usual type, and should probably be taken out before constructing the coefficient matrices. While this breakdown can be provided for in our interflow table by introducing the appropriate classification, we have not done this concretely. However, we have provided a vector in the table giving the sectorwise estimates of the aggregates of such within-unit transactions in inputs. The customary use of the coefficient matrix is justified when the degree of such non-transaction flows of inputs is small in relation to the total output.

3.31. Likewise, we have provided similar vectors for the use of own product as assets and for consumption expenditure and we have distinguished these flows in the system of accounts in Part II. The overall requirement of assets of particular types has to be determined after finding out how much of these would, in any case, be provided for by the enterprises themselves. The provision of monetary capital to such units could, therefore, be reduced by an appropriate extent.

3.32. Coming to household consumption, the presence of a large non-transaction component in many developing countries throws in doubt the usually accepted theory of consumer behaviour for such countries. In planning consumption of a future period, a household has to decide how much will be produced in the own enterprise, how much money income will accrue as profit in own enterprise or in exchange of pure factor services provided by the members of the household in other enterprises, and how much of this accrual will be retained for the enterprise both on current and on capital accounts so that the residual can be used for monetary purchases of consumer goods in the market. Only the relation between the income retained for purposes of consumption and the market purchases has some similarity with the textbook models of the theory of consumer behaviour. It is, therefore, necessary to think in terms of alternative models. This is important even for planning purposes because any attempt at projection of consumption expenditure for the future based on the accepted theory of consumer behaviour, whatever be the detailed formulation, has to be widely off the mark and this is borne out by numerous empirical exercises. Certain simplification of the alternative model is not only possible but also desirable because of the complexity of situation.

3.33. The interflow table gives estimates of the degree of non-monetization (which approximately equals the degree of non-transaction, because of the relative smallness of the transacted non-money flows like barter and payments of wages and interest in kind of both final and intermediate flows in the economy). From this information, one could surmise how the degree of monetization will change over time. When an economy is becoming rapidly monetized, this may permit substantial development financing purely by creating more purchasing power. Also, the problem of non-inflationary financing of development outlays

cannot be solved completely unless a realistic projection of the degree of non-monetization is available.

3.34. The interflow matrix, as can be seen, is modeled after similar tables used by Ragner Frisch and attempts to present the total incomings and total outgoings of the sectors. Hence, apart from the transactions in real goods and services, transactions involving financial assets and borrowings also come into the picture in a simplified form. This is linked with the capital finance accounts of Part II which also deal not only with transactions in physical assets but also with financial assets and borrowings. While we have not elaborated the proximate uses of this part of the interflow table, our main idea in incorporating these flows in the table and accounts is that, in a developing economy of the type we have been considering, the problem of finance for development cannot be solved simply by demonstrating that adequate real resources exist for development. It is necessary, in addition, to analyse the institutional basis of finance and the motivational complex that guides this, so that one could lay down how exactly the financial resources can be mobilized and appropriate enterprises and institutions could have necessary finances enabling them to translate into practice the plans and programmes that were earlier demonstrated to be feasible in terms of physical resources.

3.35. We are conscious that our treatment of the possible uses of our accounts and the interflow table is scrappy. But it is difficult to make this part of the paper more convincing without further work on the ideas of the type we have considered here. In the absence of such a research base, one could only throw up certain ideas. We, however, very strongly feel that it is necessary to pursue these ideas if we are to solve the problems of stability and growth of economies with a sizable "traditional sector" in which the public sector has to play a key role not only in the management of the economy but also in providing some essential goods and services. The framework of economic information also must be built around these ideas. Sophisticated economic analysis of advanced countries and the use of models based on this is justified partly because of the relatively more intimate knowledge of the economic reality in these countries and partly because of the complexity of advanced economies in certain spheres. We should also remember that very disaggregated analyses in advanced economies were preceded by more aggregative studies. In contrast, the knowledge of economic reality in developing countries is yet meagre and the complexity that we encounter in these countries is of a different type. We have described here some of these complexities where probing and even disaggregative work could be useful. But by and large, it would be advisable to arrive at some meaningful results at a more aggregative level before we pass on to extreme disaggregation. The economic information system presented here attempts to strike a compromise between the needs of aggregation and disaggregation and presents a feasible system, within reason, stressing the most important variables and classifications. The technology of planning and economic management cannot be imported from advanced countries because they differ from developing countries, and a system such as one we have been advocating must eventually emerge though its concrete details could be different from those we have given here, and this, as a consequence of the improvement of our understanding.

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