Chapter 1: **NATIONAL ACCOUNTING: INTRODUCTORY OBSERVATIONS**

1.1 Definition, origin and objectives

National accounting is an activity which aims at providing a statistical description of the size of the main economic activities that have taken place over a given period in an economy. With respect to the various elements of the above definition, the following may be observed. "Statistical description" implies that national accounting is of a quantitative, numerical character. "Economic activities" refers among other things to such activities as production, the earning of income, consumption, saving, investing, the exchange of goods and services, the making of transfers payments and so forth. "Period" usually refers to a period of a year, although other time intervals are also possible. "Economy" usually refers to the economic activities of an entire country, hence the term "national accounting".

In a way, the field of national accounting can be considered relatively old, as from the seventeenth century onward attempts were made to measure the total income of the people of the countries concerned, as well as of other economic aggregates. However, it is only in the 20th century that national accounting has developed into a field of regular, systematic economic statistics. This development has been closely related to 20th century developments in macro-economic thinking and its applications in the field of policy and planning. In order to put these theories and their applications in an empirical context, an increasing need was felt for statistical data relating to the variables concerned.

Until the Second World War national accounts estimates were largely confined to the measurement of national income and its main components. After World War II, national accounting expanded into an area in which macro-economic estimates relating to the various aspects of the economic process were made on a systematic basis. The presentation of the estimates in sets of interlocking accounts became the usual way of reporting, while the specific design of the accounts, including the definition of the various items of which the accounts are composed, was developed in line with the conceptual framework of mainstream macro-economic thinking. In particular, the important role of Keynesian economics should be mentioned in this connection.

In general, economic processes from an analytical point of view are characterized by the following main aspects:

- the production of goods and services, resulting in output as well as in income;
- the distribution of the income over primary factors of production, as well as over sectors/institutions;
- the re-distribution of income between sectors/institutions;
- the allocation of the re-distributed income over final consumption expenditure and saving;
- the investment process.

Thus, national accounts will generally present data relating to the above-mentioned categories. These data will, in the first instance, apply to the level of the aggregate

economy and include estimates, in monetary terms, of the levels of output, value added, consumption, saving, investments, etc. for the economy in question. As such they show the size and composition of major macro-economic aggregates such as the gross domestic product, the national income etc., of which the precise meaning will be discussed in more detail below.

In addition to this, national accounts may also give data at a disaggregated level; ie, that of the various sectors and sub-sectors of which the economy is composed. These (sub-) sectors are groups of more or less homogeneous units that play a role in the economic process, such as (various types of) enterprises, households, the government, etc. Thus data on output, incomes generated etc. may not only be presented for the economy as a whole, but also for the different sectors involved in production activities in the economy (eg, the enterprise sector, or the government sector). In the same vein, data will be presented on the various kinds of incomes received, and the various ways in which income has been spent. These will be presented not only for the economy as a whole, but for the various sectors involved in these kind of transactions as well (eg, the enterprise sector, the household sector, or the government sector). The same thing can be said for data relating to saving and investment, etc.

Data relating to the various aspects of the economic process as mentioned above are presented in different types of accounts. These different types of accounts, which together form the national accounts of a country, correspond to the different kinds of activities that characterize the economic process.

Among the types of accounts most frequently found in this connection are the following:

(1) Production accounts. These accounts give details on the size and composition of the output produced, on the various inputs used in the production process, as well as on the incomes generated in production.

2) Income-outlay (or: appropriation) accounts. These accounts give details on the size and composition of the incomes received, and on the current expenditures made out of the incomes. They also show the part of the income which has been saved.

3) Capital (or: capital-finance, or: investment-savings accounts. These accounts give details on the size and composition of the capital formation (investments), and the sources used for financing the investments made, such as savings, borrowings, etc.

From what has been said earlier, it follows that these three types of accounts may be compiled for the aggregate level of the economy as a whole, as well as---where relevant---for individual sectors.

Elaborating this point somewhat further, assume that the main sectors of a certain economy are Enterprises, Government, and Households, of which Enterprises and Government are involved in the production of goods and services, and in making productive investments.

Furthermore, assume that all three sectors are engaged in activities related to the earning and spending of income, and that they all make savings. Accounts 1) to 3) may now be compiled for the economy as a whole, as such providing details at the aggregate level on: output and inputs (in the production account); income and expenditure (in the income-outlay account); savings and investments (in the capital-finance account). In addition, one may compile production accounts at the sectoral level for those sectors involved in production, ie, Enterprises and Government in the above case. In a similar manner, income-outlay accounts can be compiled for the Enterprises, Government, and Households sectors as all three sectors are engaged in receiving and spending incomes. Capital-finance accounts may also be compiled for all three sectors, as all three of them generate savings and use these savings either for financing their own investments activities (eg, Enterprises and Government), or for financing the investment activities of other sectors (eg, Households).

The accounts for the aggregate economy may conceptually be interpreted as being (modified) aggregations of the accounts for the various sectors of which the economy is composed. In other words, aggregation of the data in the production accounts of all the sectors engaged in production activities would give---at least in principle---results corresponding to the data in the production account for the economy as a whole. A similar reasoning applies to the income-outlay, or the capital accounts.

However, the fact that the accounts for the economy as a whole can conceptually be seen as derived from sector accounts does not necessarily mean that the former accounts should be complied from the latter. Actually, in many cases the accounts for the economy in practice are compiled more or less independently of the corresponding accounts for individual sectors.

In addition to the types of accounts mentioned above, there is the:

4) External account. This account, which is normally only presented for the economy as a whole, gives details about the size and composition of the transactions with the rest of the world.

Finally, we should mention the:

5) Commodity account. This type of account presents for more or less homogeneous groups of commodities details with regard to their origin (domestic production, imports) and their destination/use (ie, intermediate use, final consumption, capital formation, export).

The accounts mentioned above all refer to different kinds of flows that can be distinguished in relation to the economic process (eg, flows of output, flows of income, flows of consumer goods, flows of investment goods etc.). However, for purposes of macro-economic analysis, data concerning stock magnitudes, such as stocks of physical assets, stocks of financial assets etc. are also required. For these and other reasons, it has become necessary to expand the accounting systems by incorporating among other things balance

sheets, which may be compiled for individual sectors, as well as for the economy as a whole.

As for the main purposes for which national accounts are used, the most important, although by no means the only ones, are:

- Analytical. In the first place one should think here of the national accounts serving as the primary database for econometric work in relation to macro-economic modelling. Secondly, national accounts data are used for the making of empirical estimates of the values of certain economic parameters, like propensities to consume; propensities to invest; income elasticities; investment-output ratios, input-output ratios and so on.

- Policy analysis. This concerns the use of national accounts data in the analysis of the impact of certain policy-measures like changes in tax rates, changes in government expenditures, etc. This includes the application of national accounts data in the construction and use of simulation models; ie, models which simulating the impact of alternative policies.

- The measurement of performance. This concerns the use of national accounts for ex-post evaluation and analysis of developments that have taken place in the economy, including developments induced by past policy measures.

1.2 National accounting: international guidelines

When comparing the national accounting systems of different countries to each other, one will observe that the majority of countries have systems of which the basic structure is quite similar. This is, because most countries use the same kind of analytical framework with respect to their economy. In this connection it is worth mentioning that presently the majority of the countries have adopted a national accounting system which is based on the guidelines recommended by the United Nations; ie, the United Nations' System of National Accounts (SNA). The SNA was published for the first time in 1953, while a revised edition was published in 1968; a next revision (SNA '93) has been published some years ago. In general, the SNA has as its main objective to present countries with a flexible, but coherent national accounting framework, which is supposed to cater for needs of a wide variety of countries, with different socio-economic structures, while this system incorporates a set of accounts considered fundamental to any economy. Cases in point are: production accounts, income-outlay accounts, investment-saving accounts, foreign accounts, etc. A number of these accounts are presented for both the aggregate level of the economy as a whole, as well as for relevant sectors and branches in the economy. These accounts contain among other things items that represent fundamental macro-economic concepts which are almost universally considered crucial for analytical, policy preparation, and evaluation purposes. Value added, domestic and national product, national (disposable) income, domestic and national saving, domestic and national investment are among the concepts to be mentioned

in this connection. The SNA gives furthermore rules and conventions for the valuation and classification of the different kinds of flows that are included in the various accounts that form part of the system.

The adoption by almost all countries of the SNA system is agreed to improve the quality of international comparisons between countries for such things as domestic product, national income and so forth; such indicators are now based on common concepts and registration conventions.

Although the national accounts of a large number of countries are based on the SNA guidelines in one way or another, this does not mean that they all have exactly the same systems. On the contrary, considerable differences can be found that relate among things to the structure and contents of the systems in question. In this connection one should think of differences with respect to such things as:

- the kinds of activities and sectors distinguished;
- certain kinds of sub-classifications used;
- the degree of disaggregation;
- the kinds of supplementary tables, supporting tables and other related data frameworks that are published in addition to the main accounts.

In addition, differences may exist regarding the degree of completeness and/or accuracy of the data presented. The following factors will play a role in explaining the various differences mentioned above:

- since countries have different socio-economic structures, accounting systems with different positions regarding sectors, activities, and sub-classifications will be required in order to capture adequately the socio-economic structure;

- differences in use of the national accounts data may have implications for the kinds of activities, sectors and sub-classifications to be distinguished, as well as for the supplementary data frameworks required;

- differences between countries in the availability of resources (financial, manpower, equipment) - which have an impact on the availability and quality of basic data needed for the compilation of national accounts - result in differences between systems, and in their implementation.

While in the case of most countries the national accounts published by them are based on the guidelines of the SNA, a small group of countries can (still) be found of which the national accounts are based on the System of Material Product Balances (MPS). This system, which has also been published by the United Nations, was developed in response to the need of centrally planned economies for a national accounting framework appropriate for their circumstances. However, since most of these countries are in the process of

switching from centrally planned to market-oriented economies, a corresponding change in kind of national accounting system can be observed; ie, a switch from MPS to SNA.

1.3 Accounting formats

National accounts data can be presented in various ways. The following are the most common:

(a) T-type accounts

(b) matrices

(c) tables

T-type accounts, which are well known from business accounting, are balancing statements with resources (incomings, receipts) on one side, and uses (outgoings, expenditures) on the other. Such a statement has the following appearance:

Account X	
Uses	Resources
---------xxx	---------xxx
---------xxx	---------xxx
---------xxx	---------xxx
Total XXX	Total XXX

A system of T - accounts provides a convenient framework for the recording the economic activities of a country or a sector, because these activities have, just like business transactions, receipt and expenditure aspects. Actually, in business accounting each transaction is considered to have simultaneously a receipt and a expenditure aspect, for which reason every transaction is in principle being recorded twice; ie, once as a receipt in a certain account, and once as an expenditure in an other account. Economic activities of a country or a sector may be looked at in a similar way; ie, having simultaneously receipt and expenditure aspects. For this reason the recording of economic activities in a national accounting system is also based, at least in principle, on a double- or multiple-entry approach.

A **matrix** is a rectangular or square array of cells containing numbers. Each account is in the matrix represented by a row and by a column. By convention the rows refer to the resources of the various accounts, and the columns to the uses. The figures in the cells of the matrix can be read in a row and in a column context. If read in the row context they are supposed to represent an resource, i.e. a receipt, for the account to which the row heading

refers, while if read in the column context they represent an use, an outgoing, for the account to which the column heading refers. As such each figure in a matrix has a double interpretation.

The kind of matrix as meant in the above connection can be presented in a schematic way as follows:

	Account 1	Account 2	.....	Account N	Total
Account 1	xxx	xxx	.....	xxx	xxx
Account 2	xxx	xxx	.....	xxx	xxx
.....	...	...	.....	...	...
.....	...	...	.....	...	...
.....	...	...	.....	...	...
.....	...	...	.....	...	...
Account N	xxx	xxx	.....	xxx	xxx
Total	xxx	xxx	.....	xxx	xxx

Earlier it was observed, that economic activities of a country are being seen as having simultaneously receipt and expenditure aspects. Since a matrix enables each figure in a cell to be interpreted in a dual way; ie, as a receipt in a certain account, and, at the same time, as an expenditure in an other account, also the matrix format appears to be suitable for recording a country's economic activities.

It should be stressed, however, that a matrix system and a system based on T-type accounts are equivalent systems in the sense that, at least in principle, data as presented in one system can be presented in the other also. However, when data from a matrix system are to be presented in a set of T-accounts, every figure has to be entered twice, namely once as an inflow in a certain account, and once more as an expenditure in some other account. Preference for one system or the other is determined by practical considerations. A matrix has the advantage of presenting in one, single table a complete set of accounts, containing as such a relatively large amount of data, in a concise and conveniently arranged way. This characteristic makes a matrix for example attractive for presenting in an integrated way data on inputs and outputs for the various production activities taking place in an economy.

1.4 On what follows

In chapter 2, we will briefly review the meaning of the main national accounting aggregates as contained in a country's national accounting system; in addition certain supplementary concepts will be dealt with.

In chapter 3, more is said about the way in which the important national accounting aggregates and their components are measured.

In chapter 4, the main types of accounts as they form part of a national accounting system are introduced.

In chapter 5, a brief outline is given of the main features of the '68 and '93 editions of the UN System of National Accounts (SNA); furthermore mention will be made of a few other internationally applied systems.

In chapter 6, attention is paid to data frameworks which are closely related to the accounting systems referred to earlier, such as input-output tables and social accounting matrices.

In chapter 7, finally, some introductory notions and concepts regarding the incorporation of environmental concerns in national accounting systems are presented.