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AN ECONOMIC CORE SYSTEM AND THE SOCIO-ECONOMIC ACCOUNTS MODULE FOR THE NETHERLANDS*)

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Abstract

In this paper the structure of an overall integrating system of economy-related statistics is discussed. Special attention is paid to the definition of the information to be included in the Core to such a system. Differences with present-day National Accounts in the Netherlands are shown in an example. Moreover, the various types of modules which should supplement the Core are worked out.

One type of modules relates to subjects which primarily stem from social statistics. In this connection, the development of a system of Social Accounts in the Netherlands is discussed. The link between these accounts and the National Accounts can thought to be constituted by the Socio-economic Accounts. After the presentation of an outline of the Socio-economic Accounts, the paper winds up with a numerical illustration.

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1. Introduction

The scope of the National Accounts has been extended gradually over the years. In their infant time, the so-called 'Social Accounts' introduced the underlying transaction categories from which variables such as national income, domestic product, capital formation or the balance of payments could be built up in a systematical way. Descending from totals of the highest order to the analysis of groups of transactors and transactions on a lower level of aggregation had a number of advantages from an educational, statistical and forecasting point of view. This is expressed by Stone in the last chapter of his famous 1947 UN memorandum, where he mentions as advantages of a social accounting approach inter alia:

> "..., it enables the structure of transactions to be set in a consistent way and therefore enables problems of logical consistency in the national aggregates to be seen clearly.
>
> "..., it provides the groundwork for a systematic collection of information on transactions, which, if adopted, would greatly increase the reliability of the estimates.
>
> "..., the structure of transactions brought out by this approach is particularly useful in connection with forecasting ... [as] an attempt to fill in a complete set of accounts for a future period restricts very considerably the values of different transactions that can be expected simultaneously."

When the first System of National Accounts (SNA) appeared, the way for further expansion of the system was opened as "the system of 1953 was essentially a step on the road to setting out clearly and concisely a framework within which the statistical information needed to analyse the economic process in all its many aspects could be organized and related" (United Nations, 1968, section 1.2). In particular a start was made with the subdivision of the production account. In this way the commodity flows between industries, which are the central feature of input-output studies, could be displayed. Also, the addition of sectoral balance sheets was anticipated. Finally, the principal product flows and stocks in the system were expressed in constant prices.

At the time the 1968 SNA was devised, the development of disaggregated models as an aid to economic analysis and policy made new demands on the National accounts framework. The resulting inflush of detailed information and new classifications could just be stomached by the system. The concept of an account was to be extended in various ways. Balancing statements were introduced which could be specified according to alternative classifications. Care had to be taken to restrict the number of classifications that interacted together in any part of the system. A matrix representation of the system was designed in order to make it possible to grasp the system as a whole without losing sight of its components (United Nations 1968, sections 1.9-1.14).

During the twenty years after the late sixties still more information qualified for incorporation in the System of National Accounts, or at least for being linked to that system. From the academic side, welfare economists pleaded for additional data on household activities. They also advocated alternative transaction classifications which would allow for the phenomenon of regrettable necessities. Politicians requested further details so as to be able to establish a relationship to microeconomic data and concepts. Social Accounting Matrices were developed. The need grew for arranging in a consistent way all kinds of monetary, quantitative and qualitative information on specific objects of government concern. Likewise, the environmental aspects of economic behaviour required a more thorough analysis.

In fact there are a number of processes at work. Probably the most radical change in the long term is the gradual disappearance of the boundaries between the economic, social and environmental fields of study. Secondly, the need is growing for the establishment of a closer link between micro- and macroeconomic statistics. Thirdly, the opinion that the traditional conventions of the National Accounts are too strict for many analytic purposes is more and more commonly shared. Finally, there is an increasing demand for co-ordination between the statistics recommended by the various international organizations. How can the statistical offices cope with all these developments? They cannot run away from their duty to make an essential step forward in the co-ordination of many, maybe all, present-day statistics. The task exceeds by far the traditional field of the national

accountant. On the other hand, it is clear that the National Accounts have a crucial role to play.

In this paper, we want to deal with some of the problems indicated above. A tentative answer is given starting out from an economic Core system. The properties of such a Core are investigated in section 2. This section also contains a numerical example of the sectoral information to be included in the Core (excluding a lot of present-day imputations). Next it is discussed which types of modules should be constructed around the Core, thus creating an extended but flexible system of integrated statistics, which in principle offers a multitude of opportunities for different types of analysis. Quite independent of the Core/module concept, the Dutch CBS has been developing so-called Socio-economic Accounts. It turns out that these Accounts fit well in the theoretical framework of an extended system of integrated statistics, in particular bridging the gap between convential National Accounts and micro household statistics. The Socio-economic Accounts are outlined in section 4. The links between these Accounts and the National Accounts are discussed in section 5. Section 6 contains some numerical results.

2. An economic Core system

2.1. Introduction

One could try to develop linkages between economic, social, demographic and environmental data from a purely abstract, theoretical point of view. If such an approach proves to be feasible, a conceptually elegant overall system of statistics would emerge. However, this road is a very intricate and even slippery one, as it is not self-evident that the end result is workable in reality. Therefore it appears advisable to follow the steps of Richard Stone and use the practical approach: start out from what you have and try to develop the system gradually.

This approach implies that the SNA, being the most extensive and generally applied integrating framework, is chosen as the starting point for further development. It is advisable to adapt the system somewhat in order to make it better suited for this task. E.g., its intelligibility would be greatly improved if most of its imputations and re-routeings were abolished. (Imputations are non-monetary extentions of the transaction boundary; re-routeings imply the registration of transactions with other units than the payer or receiver of the relevant monetary sums.) On the other hand, the present-day system should not be changed in any fundamental way on peril of destroying the very properties which make it the best starting point in the first place. In our judgment, there is a communis opinio on this subject among statisticians. But the opinions may differ on how the principle should be put into practice. The discussions are not facilitated by the different use of words. E.g., Van Bochove and Van Tuinen (1986) use the term "modules" to denote in general the structured information which has a connotation with the SNA, while the French prefer the word "satellite accounts". Also, the "Core" advocated by the Dutch, being a new term, was quite wrongly taken by many to imply a fundamental breach with existing conventions.

Whatever the words, it is important to investigate which clarifications are needed to adapt the SNA in such a way that it becomes most apt to serve as a central system to integrated statistical data. The next subsections contain a discussion of these subjects pertaining to the scope, the trans-

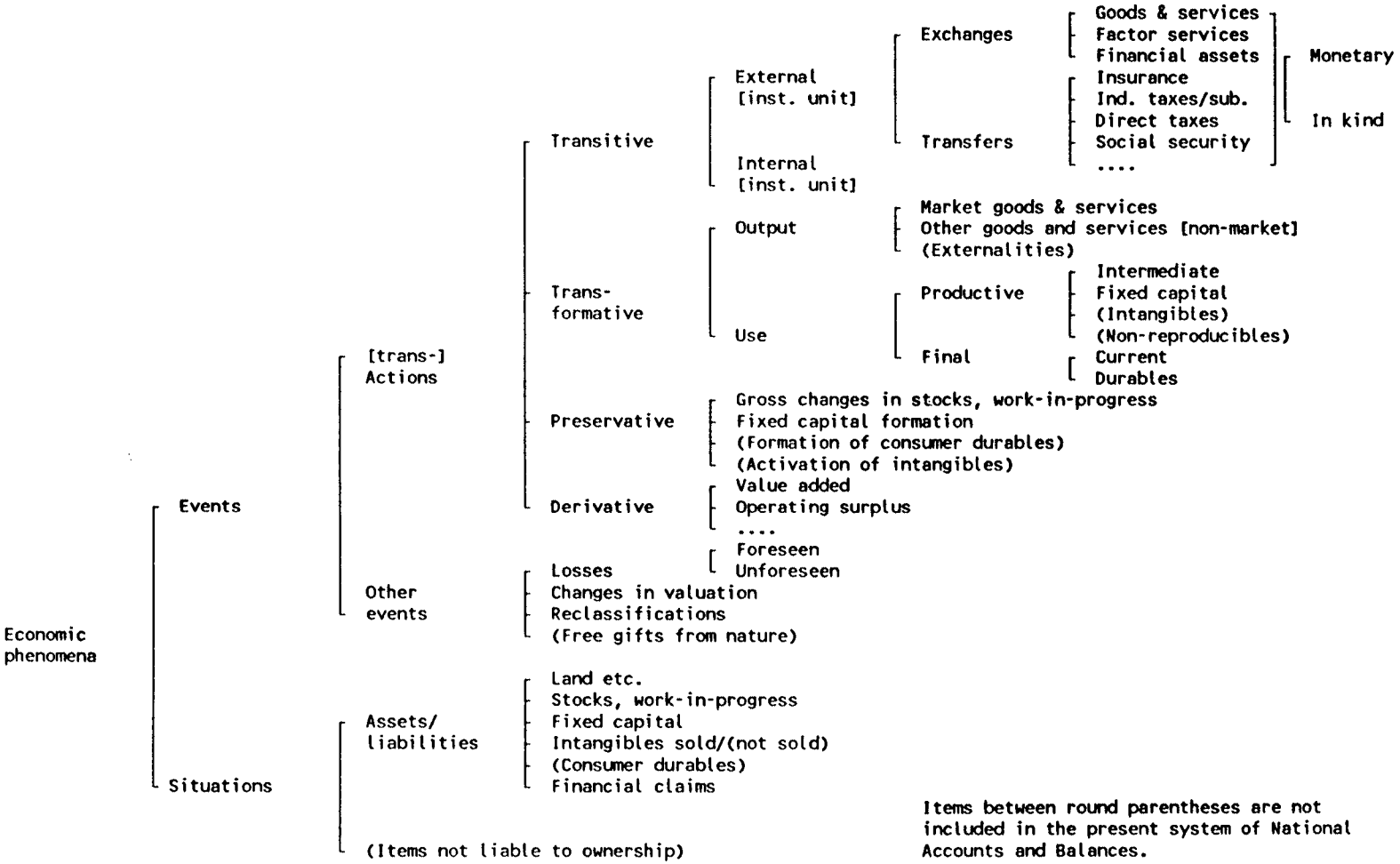
actors and the transaction classification of such a Core respectively. The last part of section 2 is devoted to the tables to be included in the Core. Next, the various types of modules will be discussed.

2.2. Scope of the economic Core

The position of the SNA as a point of departure for the integration of a wide range of statistics is greatly facilitated if the current conventions are somewhat simplified. In particular Richard and Nancy Ruggles have forcefully advocated a simplification in order to improve the link between the National Accounts and micro statistics. They used the somewhat magical term "transactor/transaction basis" in this respect. An important consequence of the transactor/transaction principle is the removal of imputations and re-routings from the SNA. Imputations and re-routings, of course, have a function in the present system. They serve (or are meant to serve), inter alia, a better comparability of the statistical results in time and space and have a number of other analytical advantages. Traditionally, the scope of social statistics has been wider than the one of economic statistics, e.g. with respect to household activities. Thus, a concept of output enlarged by the introduction of imputations might help in finding a common ground to economic and social statistics. Nevertheless, apart from a few exceptions, imputations and re-routings should not be recorded in the Core system. Instead, they may be included elsewhere in the system. A number of arguments can be given.

First, the behaviour of people is for the greater part determined by readily observable facts of life, to which imputations and re-routeings clearly do not belong. Second, respondents to the surveys, in particular households, often can give no information on the flows imputed to them. The consequent necessity to make corrections in the detailed household data of an integrated system with many imputations will constitute a perpetual nuisance in the compilation and an arbitrary element in the analysis of statistics. Third, the advantages of imputations and re-routings included in the SNA do not apply to a lot of statistics, nor are they desired for all kinds of National Accounts analysis. Even specialists sometimes have diffi-

TABLE 1. GENERAL TABLE OF ECONOMIC PENOMENA



Items between round parentheses are not included in the present system of National Accounts and Balances.

culties in interpreting figures which include imputed or re-routed flows. Finally, it is important to draw a clear dividing line between flows which can be valued more or less precisely and flows of which the value is to be computed, although this should not be taken as an absolute dogma.

This last remark may require some explanation. In fact, only a small part of the transactions and virtually no information on balances can be valued directly. This may be illustrated by Table 1, which gives an overview of the scope of phenomena which could be included in statistics which use money as unit of account. Questions on precise boundaries, economic units, supplementary characteristics and detailed classifications are disregarded. Neither are commitments listed in Table 1.

In Table 1 the phenomena are divided into two categories: those pertaining to a point in time called "situations", and those occurring in a period of time called "events". A partial registration of economic situations is contained in the balance sheets. Events may be divided in two classes. First of all there are events which are induced by units (however defined); these are the "transactions", which are registered in the flow accounts. Secondly there are events which are not brought about by some human action, these are designated in Table 1 as "other events".

The main types of transaction may be specified further. Four types are distinguished: *transitive*, *transformative*, *preservative* and *derivative* transactions. The first type is constituted by "trans"actions in the true sense of the word: they involve the transfer of economic goods from one unit to another unit. The transformative actions are those activities by which goods and services are created or consumed. The difference in time between the moment economic goods become available by purchase or production and the time of disposal through sale or consumption is accounted for by the preservative type of transactions. The fourth type is called derivative, because the value of this type of action depends entirely on the types listed above. They are a composition of two or more primary transaction categories, and often assessed as a balance.

The "other events" in Table 1 are changes which are not mainly due to explicit acts of recognizable transactors. Some, like earthquakes may be seen as "acts of God". Other ones, like bad debts and price changes are at least to a certain extent the result of human behaviour. Most of these items are contained in the reconciliation accounts of the SNA.

From Table 1 it can be read that not all potentially economic relevant information is covered by the SNA (i.e. the items between round parentheses). But of the items which are, only those transitive transactions which involve a monetary settlement have verifiable exchange values. And even some of those exchange values may not be fully acceptable, e.g., because the transfer of the economic good and the related monetary settlement lie far apart in time or because there is some special relationship between the transaction partners involved (transfer pricing). The value of all other flows and stocks can only be approximated by comparing them with transitive transactions with a monetary settlement. Often problems of timing arise. For example, the services of many economic goods accrue to the economic actors over a long span of time. Consequently, establishing the theoretical correct value of "consumption" is often a tedious task as it implies the assessment of the value of those benefits pertaining to various periods. In the SNA spreading consumption over several periods is confined to fixed capital. In all other cases, the consumption is imputed entirely to the moment in which the expenses are made. Thus, in the SNA costs which have long-term benefits, such as research and development or advertising and purchases of durable consumer goods are not activated and written off.

Such considerations may lead to the wish to register exclusively transitive actions which involve a monetary settlement in the central system. This, however, is not acceptable as the scope of such a statistics would be too limited for most kinds of economic analysis. It should always be remembered that the ultimate raison-être of a statistic lies neither in its internal logic nor the simple measurability of the phenomena it covers. Its existence can only be legitimated by its usefulness. The anomaly with which we are confronted can be remedied by the introduction of two types of additions or imputations.

Firstly, transformative transactions which at some instance are connected with transitive monetary transactions should be added. In practice this means that the transaction categories "output" and "intermediate consumption" are discerned which anticipate and succeed respectively the related transitive transactions. These timing corrections on the transitive transactions, which imply also the introduction of a number of preservative transactions in the system, improve the description of the production processes of market goods and services. Furthermore, as the payments of wages constitute important transitive transactions, the output of government and private non-profit institutions come to be registered in the system. This agrees to the shared opinion among analysts in non-centrally planned economies that these institutions produce services for collective use. In respect to all additions of this type, a reasonable valuation seems to be feasible.

Secondly, some non-monetary flows within legal units should be taken into account in order to improve further the description of the production process. Generally, such flows cannot be valued easily. Therefore, additions of this type should be restricted to those cases in which the description of the production processes solely on the basis of monetary flows would seriously impair the usefulness of the statistical results. The far-reaching acknowledgement of intra-institutional flows and the re-allocation of by-products and adjacent products as a consequence of the use of homogeneous production units certainly has to be avoided. Homogeneous production units imply not only the introduction of numerous, ambiguously imputed flows, but also large-scale arbitrary divisions of monetary flows (which get the character of overhead costs) over different production processes. A careful application of the establishment type unit as recommended in the present SNA appears to constitute a reasonable middle course between analytical needs and requirements of data reliability in a Core system. The registration of non-monetary flows within the household sector should be kept to a minimum. The assessment of a correct value is the main stumbling block in this regard. It is convenient to confine the registration of such flows in the Core to those between households and their unincorporated enterprises.

The above discussion in respect of the transaction boundary is recapitulated in Table 2.

Table 2. The transaction boundary in the economic Core

Kind of transactions	Remarks
1. Transitive transactions with a monetary settlement	Verifiable exchange values
2. Transformative transactions which at some stage are connected with a monetary settlement	Serve the description of the production and consumption; problems related to timing
3. Preservative transactions connected with transactions of type 1 and 2	Account for the timing difference between transitive and transformative transactions
4. Intra-institutional transitive flows; division of successive production processes according to establishment units	Allows for a more homogeneous description of the production process; problems related to valuation
5. Preservative transactions connected with the introduction of type 4 transactions	
6. Derivative transactions constituted from the transactions of type 1 through 5	(See section 2.4 below for a further discussion.)

If the scope of transactions is restricted along the lines suggested above and if the transactions are registered with the units involved in the monetary settlements, the problem of imputations and re-routeings would be solved for the greater part without major alteration of the SNA. Just one

more important source of imputations and re-routings should be mentioned explicitly: that of valuating flows at variance with the actual amounts invoiced or paid. The recommendations of the SNA in this respect are heavily influenced by analytical considerations. Flows may be valued at producers' prices, (approximate) basic prices, purchasers' prices and f.o.b. or c.i.f. depending on the process described. The perceptions of the economic subjects and thus the linkage to other statistics would be facilitated greatly, if in the Core system only one kind of valuation is applied: that according to purchasers' prices.

Globally, the scope of the transactions in the 1968 SNA is convenient for the purposes of a system which serves as a point of reference to all kinds of social, economic and environmental statistics. For reasons of reliability and comprehensibility however, the number of imputations and re-routings should be reduced. A list of deletions in this respect would encompass some kinds of own-account output which are not accompanied by payments to employees (including the services of owner-occupied houses), compensation of employees in kind, the re-routing of employers' contributions to social and pension insurance, the imputed flows with respect to transfers in kind, and re-routings connected with the valuation of flows at other than purchasers' prices.[1)] The problems connected with the valuation of stocks of goods, financial items and natural resources are an impediment to the inclusion of stock data in the Core. Consequently only flow data are recorded and information on stocks must be registered elsewhere in the system.

2.3. Transactors in the economic Core

The definition of the scope of the economic Core system has an influence on the definition of transactors in such a system. In the previous subsection, a couple of non-monetary flows which occur within legal units were admitted to fall within the production boundary in order to improve the description of the production process. This implies that legal units may be split into a number of smaller economic units. Splitting is advisable only when

- a corporate enterprise produces goods and services of a very different kind and enough statistical data are available to describe the underlying

production processes separately;
- a government institution produces goods and market services of considerable value;
- a household runs an unincorporated enterprise.

(Of course, splitting is inevitable when a unit partially falls outside the boundaries set for the economy).

However, this break-down leads to a difficult problem. In most cases, the units thus defined are irrelevant when describing financing processes. Neither is a split of financing transactions according to sub-units of institutions feasible from a practical point of view. The answer to this problem must be that there are two types of units to be included in the Core: one relevant to the production process and one relevant to the financing process. It can be deplored that it is not possible to employ only one type of transactor in the system. On the other hand, nobody wants a system which is technically perfect, but cripple from an analytical point of view.

It is an interesting feature that in social statistics an analogous problem occurs. Some processes pertain to individuals, in other processes households are the principal units, and it is often important to make the transition between the two types of units. The parallel goes even further. The transition from units relevant to the production process to units relevant to the financing process is made at the point where the description of both processes meet, that is to say, in the distribution of income. The same is true for social statistics. The contribution of the household sector to the processes of income generation is mainly determined by individual factors, but its consumption and financial decisions mainly apply to the household as a whole. These two kinds of processes meet at some stage in the distribution of income (direct taxes for example, usually, but not always, apply to households units). In other words, the description of the income distribution process is essential both to economic and social statistics. Preferably, it is specified according to four types of units: *establishments*, *institutional units*, *individuals* and *households*. The analysis of interactions between various economic and social processes would be enhanced if it were possible to link income data on these types of units at a very detailed level. The closer one approaches the level of individual units, the

more opportunities there are for linking different specifications of units, and the more types of analysis become feasible.

The 1968 SNA does not recommend a link between the classification of total value added by groups of producer units and by institutional sectors otherwise than at the most aggregate level: "It would always be possible to show direct the interaction between the establishment and enterprise classifications, to classify compensation of employees in corporate and quasi-corporate enterprises, for example, simultaneously by major kind of activity of both the constituent establishments and the parent enterprises. In the present system this is not done... The reason for not proposing the more ambitious treatment is that, while in principle it represents little difficulty, in practice it represents a great deal and in fact up to now has been attempted in only a few countries. Since the routing of income flows forms a central part in any national accounting system ... it seems desirable to formulate the system in a manner accessible in practice to a wide range of countries".[2] It is not unreasonable to assume that the obstacles which prevented a recommendation in 1968 for a direct interaction of these two classifications are removed by now. In the light of (a) the closing gap between micro- and macroeconomic statistics, (b) the importance of establishing clear links between production and financing processes and (c) the facilities which modern computers offer, it even seems imperative to construct statistical data on income which are classified according to both classifications at the same time (cf. Al and Van Bochove, 1988). As appears from the previous paragraph, it is suggested here that integrated income data should moreover be classified according to groups of individuals and households.

These suggestions presuppose that a number of conditions are met. One of the most important ones is the existence of extensive registers of units. It should be realized that on the one hand various processes are to be described by a particular type of unit, but on the other hand actual units may be relevant to several processes. An example of the latter is constituted by an employee who does not live in a multi-person household and thus is the relevant unit in respect of both the primary distribution of income and the process of consumption expenditure. Another example concerns the small cor-

porate enterprise, which is the relevant unit for the description of the production process and the financing processes alike. It will be convenient if the statistical offices have several registers of units at their disposal on the basis of which stratifications can be made according to the process which is to be investigated. All such registers should contain information on how smaller units in one register are linked to larger units in another register and vice versa.

2.4. Transaction classifications

The basic classification of transactions can be derived directly from the four archetypes of economic function: *output*, *consumption*, *distribution* and *financing*. A subdivision of these functions is more problematic. E.g., the distinction between intermediate and final consumption involves problems which were once labelled as "the Eternal Jews of national income measurement" (Jaszi, 1973, p. 94). In the end the decision is a subjective one. Stone remarked in 1947: "It seems clear that what is normally regarded as a net benefit is dependent on social valuations and changes as these valuations change. Thus, for example, the existence of pit-head baths at a coal mine would, a hundred years ago, have been something quite exceptional, in no sense a cost of doing business, and would doubtless have been regarded as a net benefit to the employee rather than as a compensation for the particular disadvantages of his trade. Nowadays, perhaps, the matter would be differently regarded, as such amenities would hardly be regarded as income in kind" (Stone, 1947, p. 57). Particularly the welfare economists and business accountants have made clear that there is no such thing as a general accepted interpretation of flows, not even in the short run.

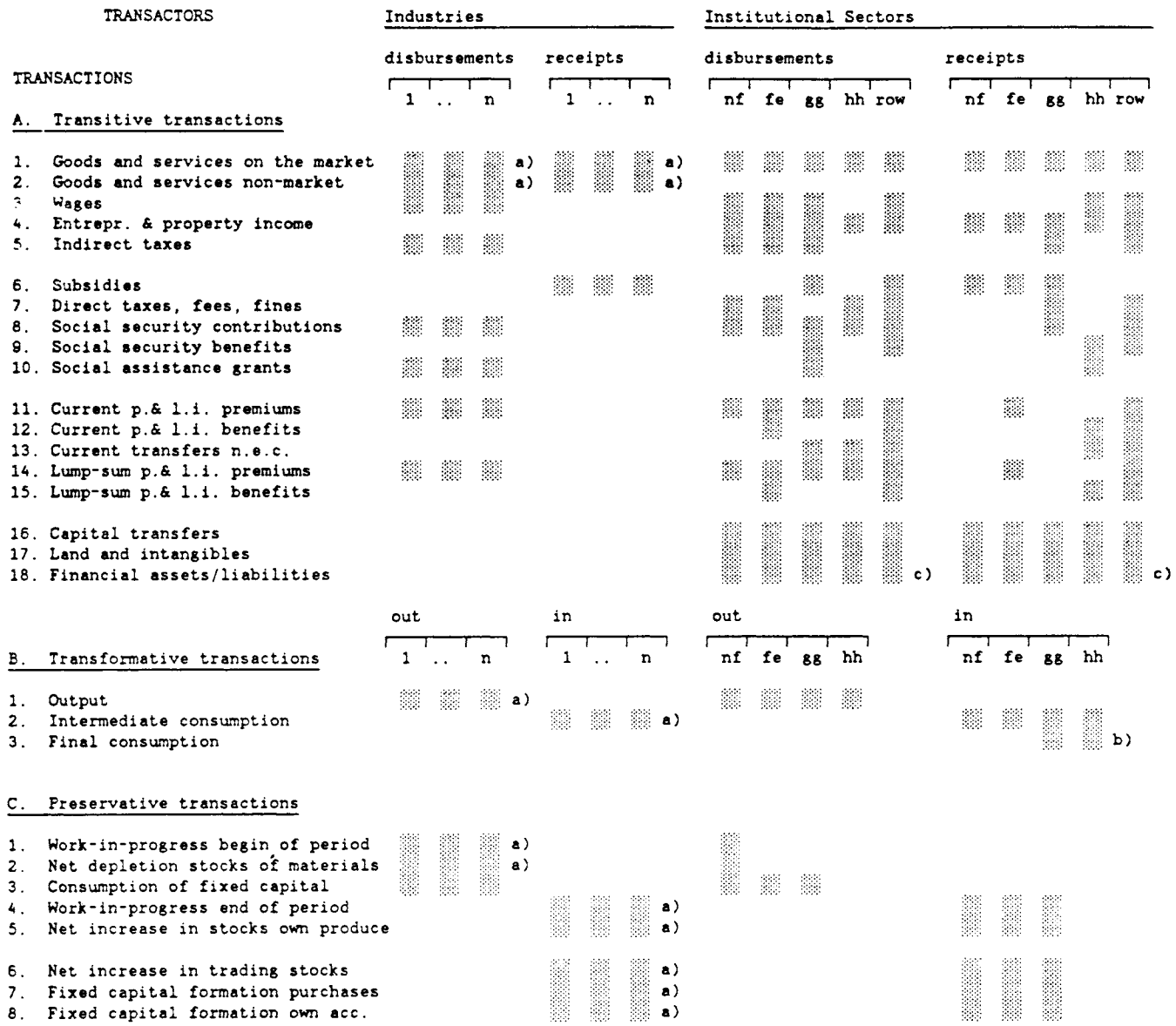
A number of conclusions can be drawn from this observation. A first conclusion is that every classification of transactions necessarily is a *subjective* one, liable to changes in individual appreciation in time and space. This implicates that there is no such thing as an objective system of National Accounts, or for that matter, a fully objective economic Core system. Another consequence is that, where opinions differ, the statisticians

must allow for re-interpretation of the statistical results. So, only a flexible System of National Accounts can perform its purpose well.

There are two ways in which the flexibility of a system can be improved. One way is to extend the transaction classification. By further specification for example, the "instrumental" character of some outlays can be shown. Another option is the introduction of a multiple classification of transactions.

The concept of "function" which constitutes the basis of the transaction classification in broad economic categories, gives little support when one tries to use it for a detailed classification. For example, the specification of the function of production in different types of activities is probably based more on practical considerations than on functions derived from economic theory. On the one hand, the classification of transactions (functions) sometimes intertwines with those of the *objects* of transactions (types of goods, financial items etc.). On the other hand, complications arise when more than one single functional category is applicable. The options may exclude one another or overlap. An example of the first type is government subsidies, in respect of which it is hard to tell whether the purpose is supporting consumers' purchasing power, stimulating the use of particular products (e.g. for health or military reasons), or granting an income to producers. The overlapping type may be illustrated as follows: a person writes in order to make a paper in order to improve statistics in order to make better models in order to conduct economic policy in order to win the next elections for the government. So what is that person doing: writing, making statistics, practicing economic science, preparing for economic policy or defending the sitting cabinet? We will return to these questions in section 3 which deals with functional modules. Here, we end this discussion on functions with the observation that in practice it will not be very easy to apply two different transaction classifications in the system. An effort in this direction is the design of a purpose classification of business outlays (see also subsection 4.2). However, in constructing a double classification the danger stands that the essential distinctions between them remain in the dark.

TABLE 3. SURVEY OF DATA CONTAINED IN THE ECONOMIC CORE



D. Derivative transactions (examples)

Gross Domestic Product (mp)	= Output (B1) less Intermediate consumption (B2). To be cross-classified by industry and institutional sector.
Gross Domestic Product (fc)	= Output (B1) less Intermediate consumption (B2) less Indirect taxes (A5) plus Subsidies (A6).
Gross Operating Surplus	= Output (B1) less Intermediate consumption (B2) less Indirect taxes (A5) plus Subsidies (A6) less Wages (A3) less Social security contributions (A8) less Social assistance grants (A10) less Current and lump-sum pension and life insurance premiums (A11 and A14).
Cash flow	= Turnover less Purchases (A1 receipts less A1 disbursements) less net Indirect taxes (A5-A6) less Compensation of employees (A3-A8-A11-A14) less Consumption of fixed capital (C3) less Interest (part of A4).

Legenda:

nf	Non-financial enterprises	a)	Classified by kind of goods and services
fe	Financial enterprises	b)	Classified by function
gg	General Government	c)	Classified by type of financial asset/liability
hh	Households	mp	Market prices
row	Rest of the world	fc	Factor costs
	Contained in the Core	p.& l.i.	Pension and life insurance

A second option for introducing flexibility in the system by way of the transaction classification is the use of alternative definitions of derivative transactions. In subsection 2.2 it was argued that several types of transactions can be distinguished. Transitive, transformative and preservative transactions are elementary actions, while derivative transactions constitute balances of such elementary actions, defined for the convenience of analysis. The most important and debated derivative transaction is the concept of "income" (notably the profit element in it). Often the balances in the present National Accounting systems are already defined with some alternatives: gross or net, at market prices or at factor costs etc. This flexible character of the derivative transactions can be given more weight in the oncoming system by allowing for more alternative definitions. This can be done without impairing the basic structure of the statistics. Of course, it is advisable to choose a particular set of derivative transactions as the central concept, so as to avoid confusion with non-specialized users.[3)]

2.5. The tables in the economic Core

On the basis of the discussion in the sections above a survey of data to be contained in the Core can be constructed (cf. Table 3). The four types of transactions are dealt with separately. The transitive transactions of the institutional sectors form a closed set which answers to the rules of double bookkeeping. The transformative and preservative transactions can be regarded as entries on two special accounts relating to mutations in goods and services brought about by actions (changes which are not induced by actions, such as revaluations and losses, are to be registered elsewhere, see sub-section 2.2). The derivative transactions shown in Table 3 are only examples, as this type of transactions constitutes an open-end category. In conformity with the conclusion of subsection 2.2 only flows are included in the Core system. The stocks of work-in-progress at the beginning and the end of the period may appear to constitute an exception to this rule. This, however, is not our intention: it is assumed that all work-in-progress at the beginning of the period is an input to the production process in that period. Similarly, work-in-progress at the end of the period is regarded as

an output of the period in question. This amounts to a gross registration of the change in work-in-progress.

The transaction classification in Table 3 differs from the usual SNA classification but is easily converted into it. In several transactions relating to goods and services an explicitation of intra-institutional flows is applied.[4)] Purchases and sales of commodities, which are transitive transactions, are distinguished from their destination (additions to stocks, intermediate consumption etc.) and origin (stocks, output) respectively. These are accounted for by preservative and transformative transactions. Lack of data may necessitate equating the timing of some the transformative transactions with the moment the relevant purchases and sales are made. For instance, intermediate inputs may be identified with the purchases to that end. Table 3 purports to show the principally correct registration in this respect. For the sake of simplicity however, no stocks of products with the consumers are introduced. Sales and purchases of commodities are recorded at purchasers' values. The SNA concept "compensation of employees" is regarded as a derivative transaction, encompassing wages paid to employees plus employers' contributions paid to social security and pension institutions. This way of registration avoids the necessity to re-route employers' social contributions via the household sector.

In Table 3 it is indicated how the transactions should be specified. All goods and services transactions of industries are detailed according to kind of goods and services. Such an overall specification is not required in respect of the institutional sectors. However, a specification according to function is required of final consumption by households and general government (and by private non-profit institutions, which are not shown as a separate sector in Table 3). Notable is the cross-classification of the derivative transaction Gross Value Added. This transaction category is detailed by industry *and* by sector, thus linking the description of the production process and the financing processes. Another feature of the central system which is of great importance to economic and social statistics concerns the large detail applied in the classification of industries and sectors. Such detail is a prerequisite for the establishment of close linkages with micro-economic and social statistics.

Specifications of transactions of the kind activity x activity which may be constructed for input-output analysis, or sector x sector accounts ("Marktverflechtungstabelle") as proposed by several writers in the Statistisches Bundesambt (FRG), are not included in the economic Core. Such tables are very useful for economic analysis and, from a statistical point of view, for checking the consistency of the overall system. In the Netherlands both the input-output tables and the accounting system have this transactor x transactor structure. In general however, precise data on transaction partners are neither included in statistical surveys nor known by the economic subjects. Exceptions apply to very specific cases only, such as parts of the transactions of financial institutions and government. Consequently, for the greater part the transactor x transactor data cannot be computed without assumptions which are unacceptable with regard to the objectives of the Core.

2.6. An example of the sectoral information in the economic Core

An example of the information concerning institutional sectors in the Core is shown in Table 4. This table is an illustration of the right-hand side of Table 3. For the sake of convenience, columns for the aggregate of the domestic sectors and grand totals have been introduced. Table 5 contains comparable figures according to the SNA definitions in the same format. The figures, which relate to the 1984 National Accounts for the Netherlands, are derived from Gorter (1988).

In Table 4, imputations and re-routeings have been omitted as much as possible. Corrections in this respect relate in particular to:

- Employers' social contributions. Social security and pension benefits paid by employers are registered as direct payments to the relevant institutions. Unfunded employee welfare benefits are entered as Wages.
- Owner-occupied dwellings. Relevant intermediate consumption is reclassified as final consumption. Other corrections encompass inter alia the convertion of indirect taxes to direct taxes.
- Transfers in kind in respect of wages, social security, social assistance and gifts to and from the Rest of the world. The goods and services

TABLE 4. INDICATION OF SECTORAL INFORMATION IN THE ECONOMIC CORE, Netherlands, 1984

		NF	FE	GG	HH	DOMESTIC	ROW	TOTAL	NF	FE	GG	HH	DOMESTIC	ROW	TOTAL
		disbursements							receipts						
Transitive transactions		mln gld													
A 1.	Goods & serv. on the market 1)	393020	10200	63960	200580	667760	240690	908450	656790	27270	4290		688350	220100	908450
A 3.	Wages	120310	7920	37990		166220	1270	167490				166370	166370	1120	167490
A 4.	Entrpr. & property income	98220	43250	30940	12580	184990	29600	214590	27870	70410	33610	52450	184340	30250	214590
A 4.1	Entrpr.inc.from uninc.ent.	(30980)				(30980)		(30980)				(30980)	(30980)		(30980)
A 4.2	Withdrwls from quasi-c.ent.	(4700)	(170)			(4870)		(4870)		(1470)	(3400)		(4870)		(4870)
A 4.3	Interest	(29710)	(40260)	(30670)	(12500)	(113140)	(23600)	(136740)	(6110)	(82610)	(11310)	(14610)	(114640)	(22100)	(136740)
A 4.4	Corr.banking services								(16420)	(-16420)			(0)		(0)
A 4.5	Dividends, rents	(32830)	(2820)	(270)	(80)	(36000)	(6000)	(42000)	(5340)	(2750)	(18900)	(6860)	(33850)	(8150)	(42000)
A 5.	Indirect taxes	45540	830	420		46790		46790			46790		46790		46790
A 6.	Subsidies			12610		12610		12610	12600	10			12610		12610
A 7.	Direct taxes, fees, fines	8900	1400		44030	54330	0	54330			54330	0	54330		54330
A 8.	Social security contr.	25280	1410	5030	51140	82860		82860			82860		82860		82860
A 9.	Social security benefits			57960		57960		57960				57260	57260	700	57960
A 10.	Social assistence grants		140	20150		20290		20290				20290	20290		20290
A 11.	Current p. & l.i. premiums	5830	820	3100	8560	18310	190	18500		18480			18480	20	18500
A 12.	Current p. & l.i. benefits		12790			12790	110	12900				12360	12360	540	12900
A 13.	Current transfers nec			72160	2510	74670	6220	80890		140	67360	4410	71910	8980	80890
A 14.	Lump-sum p. & l.i. premiums	2210	0	740	1480	4430		4430		4430			4430	0	4430
A 15.	Lump-sum p. & l.i. benefits		2580			2580	0	2580				2580	2580	0	2580
A 16.	Capital transfers	1150	0	14770	1430	17350	620	17970	9820	130	5720	1190	16860	1110	17970
A 17/18.	Land, intngbls, net lending	6620	39530	-24870	-5400	15880	-15880	0							
		out							in						
Transformative transactions															
B 1.	Output	665570	29440	71490		766500									
B 2.	Intermediate consumption								351130	8690	22170		381990		
B 3.	Final consumption									3240	97800	200580	301620		
Preservative transactions															
C div.	Net incr.stocks & w-i-progress								1990				1990		
C 3.	Cons. of fixed capital	34520	350	2620		37490									
C 7.	Fixed cap. formation purchases								46310	440	10550		57300		
C 8.	Fixed cap. formation own acc.								2370		640		3010		
Derivative transactions (example)															
Gross Domestic Product (mp) in the Core (B1 - B2)		(314440)	(20750)	(49320)		384510									

1) Trade transactions are not registered gross.

TABLE 5. MAIN SECTOR TRANSACTIONS IN THE SNA, Netherlands, 1984

		NF	FE	GG	HH	DOMESTIC	ROW	TOTAL	NF	FE	GG	HH	DOMESTIC	ROW	TOTAL
		disbursements							receipts						
Transitive transactions		mln gld													
A 1.	Goods & serv. on the market					227750	248560	476310					248560	227750	476310
A 3.	Wages	119220	7950	33230		160400	1270	161670				160550	160550	1120	161670
---	Employers' social contr.	34060	2360	13180		49600		49600				49600	49600		49600
A 4.	Entrpr. & property income	108040	71880	29860	1700	211480	29600	241080	26790	70410	32530	81100	210830	30250	241080
A 4.1	Entrpr.inc.from uninc.ent.	(31000)				(31000)		(31000)				(31000)	(31000)		(31000)
A 4.2	Withdrwls from quasi-c.ent.	(4700)	(170)			(4870)		(4870)		(1470)	(3400)		(4870)		(4870)
A 4.3	Interest	(39700)	(40260)	(29860)	(1700)	(111520)	(23600)	(135120)	(5300)	(82610)	(10500)	(14610)	(113020)	(22100)	(135120)
A 4.4	Corr.banking services								(16420)	(-16420)			(0)		(0)
A 4.5	Dividends, rents	(32640)	(31450)			(64090)	(6000)	(70090)	(5070)	(2750)	(18630)	(35490)	(61940)	(8150)	(70090)
A 5.	Indirect taxes	46740	830	420		47990		47990			47990		47990		47990
A 6.	Subsidies			12610		12610		12610	12600	10			12610		12610
A 7.	Direct taxes, fees, fines	8900	1400		42830	53130	0	53130			53130	0	53130		53130
A 8.	Social security contr.	0	0	0	82860	82860		82860			82860		82860		82860
A 9.	Social security benefits			81570		81570		81570				80870	80870	700	81570
A 10.	Social assistence grants		140	24870		25010		25010				25010	25010		25010
A 11.	Current p. & l.i. premiums														
A 12.	Current p. & l.i. benefits														
---	Unfunded empl. welf. contr.				4610	4610		4610	820	100	3690		4610		4610
---	Unfunded empl. welf. benefits	820	100	3690		4610		4610				4610	4610		4610
A 13.	Current transfers nec			68730	2810	71540	6420	77960		140	67360	1060	68560	9400	77960
A 14.	Lump-sum p. & l.i. premiums														
A 15.	Lump-sum p. & l.i. benefits														
A 16.	Capital transfers	1150	740	15510	1430	18830	620	19450	9820	870	5720	1930	18340	1110	19450
A 17/18.	Land, intngbls, net lending	-3680	6600	-25030	38250	16140	-16140	0							
		out							in						
Transformative transactions															
B 1.	Output	690030	29440	71390		790860									
B 2.	Intermediate consumption								360140	8530	21940		390610		
B 3.	Final consumption									0	66390	236750	303140		
Preservative transactions															
C div.	Net incr.stocks & w-i-progress								1990				1990		
C 3.	Cons. of fixed capital	38220	350	2620		41190									
C 7.	Fixed cap. formation purchases								60310	440	10550		71300		
C 8.	Fixed cap. formation own acc.								2370		640		3010		
Derivative transactions (example)															
Gross Domestic Product (mp) according to the SNA (B1 - B2)		(329890)	(20910)	(49450)		400250									

concerned are reclassified as consumption of the institution which pays for them. These corrections account for a rise of final consumption of general government with 47% if compared with present SNA conventions.

- Pension funds and life insurance companies. The transaction Imputed rent, previously more than 57% of property income of the household sector, is removed. Also, relevant current and lump-sum premiums and benefits are introduced. The consumption of the services of pension funds and life insurance companies is registered with the financial institutions themselves.
- Processing trade with the Rest of the World is registered net. This accounts for a downward adjustment of imports and exports with somewhat more than 4%.
- Registration of imports and exports at purchasers' prices.
- Gross registration of transactions within the general government sector. (Netting can be regarded as a negative imputation.)

Also, a number of adjustments are made for imputations and re-routeings which are particular to the Dutch National Accounts. Some imputations are not removed (yet), such as the one concerning casualty insurance.

At the bottom of Table 4 an example of a derivative transaction is given. Gross Domestic Product at market prices is nearly 4% lower in the Core than according to SNA conventions, which is mainly due to the deletion of the imputation for owner-occupied dwellings.

3. The modules in an extended system

A "module" in an extended system of statistical data on economic, social and environmental phenomena can be defined as a set of statistical information which can be linked directly to the central system. Since the central system yields a standard summary of economic transactions, linkage of supplementary information to the Core enables a more profound analysis of the subject studied. The nature of such information is very diverse. One may think of the volume and price components of the flows registered in the Core. For certain purposes the scope of the transactions may be widened by introducing imputations. A more detailed or alternative transaction classification may facilitate certain types of economic analysis. Data on stocks and revaluations often are indispensable supplements to figures on flows. Sometimes, both monetary and non-monetary information are required.

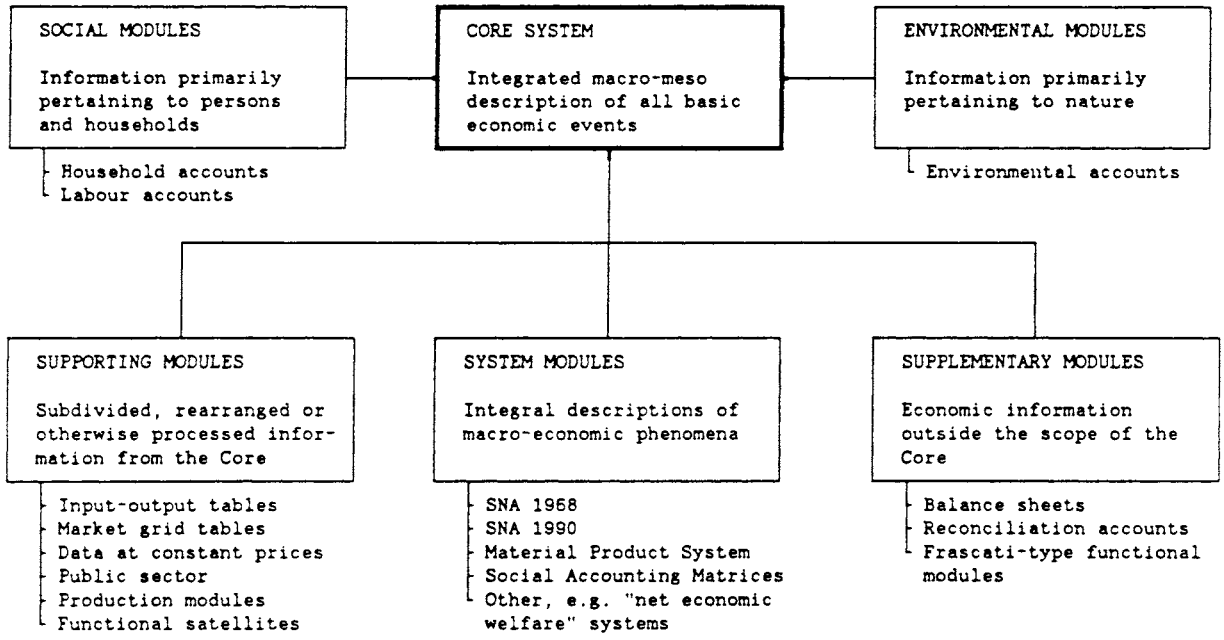
It is not an easy task to give rules on how such information should be grouped into logical and practical modules around the Core system. Yet, it should be tried, as there is much to be gained from a coherent approach. A number of tentative suggestions is made here.

In distinguishing various types of modules, the terminilogy of the SNA is taken as a starting-point. The 1968 SNA contains a classification of information according to importance. Descending from the highest order there are standard accounts, standard supporting tables; supplementary classifications, sets of accounts and tables; and finally the somewhat amorphous group of supplementary entries, memorandum items and supplementary memoranda. The standard accounts delineate the basic features of the system and furnish guidance concerning the presentation of the system's main series. Standard supporting tables portray certain limited facets of the system, for example, the schemes of detailed classification. Supplementary data are constituted by information which does not fit exactly into the structure of the system, but is important enough to be reported regularly.

This classification of data is reflected in Table 6, which furnishes a blue-print for the organization of data in an enlarged system of economy-related statistics. Naturally, the central position in such a system is

occupied by the Core. Without pretence to being exhaustive, it appears to be convenient to distinguish between modules which contain primarily information on persons and households, on the environment and on economic matters. These three types are situated respectively left, right and under the Core system in Table 6. Classified as *Social modules* are the Household Accounts and Labour Accounts, the former being the subject of sections 4 and 5 of this paper. There are three types of economic modules distinguished in Table 6: Supporting modules, System modules and Supplementary modules.

TABLE 6. A SYSTEM OF ECONOMY-RELATED STATISTICS



Information which falls in principle within the transaction boundary of the central system and implies a subdivision, rearrangement or a processing of the data thereof is classified as *Supporting modules*. In Table 6 a number of probable Supporting tables is shown. First of all there are the various types of input-output tables (excluding the make and use tables, which are included in the Core). Some of these are absolutely necessary for the purpose of economic analysis and should be considered mandatory. The market grid tables, a translation of German term "Marktverflechtungstabelle", are tables in which the market transactions of sectors are specified according to the sector of the transaction partner. The importance of this kind of

tables has been mentioned in subsection 2.5. Of course, the module containing National Accounts data at constant prices is mandatory as well. This information is a regular component of the present-day SNA. This applies equally to data on the public sector. Production modules (economic satellites in the French terminology) are modules with additional classifications and quantitative information which are directed on the specification of a particular production process and related processes. A good example of a production module is constituted by the Eurostat Economic accounts for agriculture and forestry.

Functional satellites are an important and very useful type of modules which are developed by INSEE (France).[5] Starting out from a "characteristic activity" (cf. Teillet, 1988), a description is given of the production, beneficiaries and the financing of a group of goods and services. As there is the possibility of adding non-monetary data, these satellites contain all the information a policy maker could wish to have on a particular field of interest. Yet, from a systematical point of view, the French functional satellites have a serious flaw: there are overlaps. This objection can be met by the adoption of two conventions. Firstly, the starting point should be a *category of consumption* rather than a characteristic activity. Secondly, the production process should not be broken down into sub-processes implying a widening of the production boundary. Modules which answer to these two conditions are listed under the heading *Supporting modules*. Encompassed are the functional categories of household, private non-profit institution and general government consumption such as food, clothing, housing, health, safety etc. It must be admitted though that descriptions of sub-processes of production can be very useful. An example is the so-called Frascati Manual which furnishes recommendations with respect to research and development. This type of modules, rather confusingly often also designated as functional, is considered as a species of Supplementary modules in Table 6.

The *System modules* of Table 6 concern integral descriptions of macro-economic phenomena, differing in the transaction boundary, classifications, valuations etc. from the data in the central system. Typically, in this category come the various international reporting systems. Those systems

contain often imputations and re-routings in order to promote the comparability of data from countries with different institutional settings.

Supplementary modules contain economic information which lies clearly outside the scope of the data recorded in the Core. Above, the Frascati-type functional modules were mentioned as Supplementary modules. In those modules, functions are assessed to some flows within establishments. This implies an essential widening of the production boundary as defined in the Core. Well-known supplementary modules are the reconciliation accounts and the balance-sheets. These modules, which contain data on the items denoted as 'Other events' and 'Assets/liabilities' in Table 1 (p. 8), supplement the information on transactions and surely must be considered mandatory. Balance-sheets are an important element in the analysis of economic behaviour. Revaluations and losses are closely connected with conceptions of profits and holding gains, and so with the concept of income. For certain types of business accounting and probably also for national accounting (cf. Van Bochove and Van Sorge, 1989), derivative transactions should also include events which are not due to actions of units.

4. Socio-economic Accounts as a Social module

4.1. Introduction

It has been pointed out in section 3 that around the economic Core a number of modules can be constructed. Among these is the group of Social Modules which primarily contain information on households and persons. The remaining of this paper is focused on the Dutch Socio-economic Accounts (SEA), which may be regarded as an example of such a Social Module. As the SEA were developed independently of the Core/module concepts, first some historical background will be given. Next, the outlines of the SEA will be sketched, followed by a discussion of the links with the Core and a table with some statistical results.

Some years ago the Netherlands CBS decided to undertake the developement of a fully fledged system of Social Accounts[6]. Given the complexity of this subject (cf. e.g. Stone, 1971, United Nations, 1975, 1977a and 1979, and Saunders, 1985), it was preferred to evolve the Social Accounts gradually from so-called aspect-systems, where each aspect of the quality of life of the population is covered by a relevant set of statistics. Aspects include in this context "demography", "labour", "economy" (including, inter alia, income, consumption, wealth, and social welfare), "traffic", "justice and security", "culture and recreation", "education", "health", and "environment". At present two such aspect-systems are being elaborated at the Department for Social Accounts, viz. a set of *Socio-demographic Accounts* focusing on the aspect "demography" (see e.g. Koesoebjono, 1987, and CBS, 1989), and a set of *Socio-economic Accounts* focusing on the aspect "economy" (see e.g. CBS, 1988, and Huigen et al., 1989). In a next stage these two systems will be integrated further, and supplemented with data on the use of time as a concrete move towards a social accounting system for the Netherlands. Moreover, systems of *Educational Matrices* and *Health Statistics* are being developed at the Netherlands Central Bureau of Statistics for some years now (see e.g. Smulders, 1980, and Bonte and Van Son, 1988). In addition, a system of *Labour Accounts* is being developed recently (see e.g. Bos et al., 1988).

4.2. Outline of the system of Socio-economic Accounts

The Socio-economic Accounts provide a comprehensive description of income and outlay for about 50 subgroups of the population. The population subgroups are a cross-classification of household-size, age structure, income source and income level. The Dutch SEA correspond to a high degree with a set of accounts which is often described as "Household accounts", or with the household part of a Social Accounting Matrix.[7)] In this subsection the SEA will be described in broad outlines.

The purpose of the SEA is to provide a quantitative statement, which in a systematic and consistent way describes how the *socio-economic process* takes place yearly. By socio-economic process is understood the economic process, *as far as the population* - consisting of persons and households - *participates in it*. Persons and households are distinguished according to socio-demographic and socio-economic characteristics. The aspects of the socio-economic process described in the SEA relate in particular to the acquisition of income and property, income distribution and redistribution, consumption of marketed goods and not-marketed goods, non-market activities such as voluntary work and household production, and the distribution of wealth. Moreover, the interactions between the population and organizations in society (enterprises, government and such) play a part as well. Also the role of demographic factors in the socio-economic process is a point for attention in the SEA.

From the description of the purpose of the SEA, it can be concluded that at the same time the *socio-economic position* of persons and households is described. This socio-economic position is closely related to the economic power of persons or households, i.e. power originating from economic relations. This refers particularly to the command over income and wealth and over goods and services. Or to put it differently: the distribution problem of (material) welfare between persons and households is in the centre of interest in the SEA.

The size and distribution of economic welfare among members of the population is set out in the SEA on the basis of the total acquisition of

goods and services by the population, i.e. *individual* consumption of both marketed and non-marketed output (the latter also including goods and services which are the yield of household activities not covered in the SNA), where the population is distinguished by subgroups relevant to the description of the distribution in question.[8)]

In the accounts of the SEA, the generation of income, distribution and redistribution of income, saving and capital accumulation, and distribution of wealth are described for population subgroups. The accounting structure is based on the so-called transactor-transaction principle, and the following two conventions:

(i) the *economic identity* between income ("receipts") on the one hand, and final consumption expenditure plus saving ("disbursements") on the other (i.e. for every income there is a corresponding outlay);

(ii) the *accounting identity* that changes in wealth - defined as the difference between the stock of wealth at the beginning of the period in question and the stock of wealth at the end of that period - are the result of receipts and disbursements ("flows") during that period, after adjustments for any revaluations ("capital gains and losses"). The length of the accounting period in the SEA is the same as in the SNA, i.e. one year.

4.3. Aspects of individual consumption

The total acquisition of goods and services by the population (i.e. individual consumption) forms the point of departure in the SEA. The way in which the SEA intend to describe the allocation of goods and services, can be outlined as follows. Goods and services allocated to the population can be the product of activities within households or activities outside households in organizations, such as enterprises or government institutions. These goods and services can be obtained by the population in the market (generally by paying a price for them) or not in the market. Goods and services acquired by the population can be financed ("paid") by the consumer

of the good or service in question, by third parties (organizations or other households) or a combination of both. The SEA aim at describing the *amount* - expressed in principle in money terms as well as in quantities (the number of goods or the number of hours of services rendered) - of the goods and services acquired by the various population subgroups, the *origin* of these goods and services (for example, whether in the market or not), and how the acquisition of these goods and services is *financed*, i.e., who makes the expenditure (for example, the consumer or some other entity). Thus, the SEA have many features in common with the French "Comptes satellites" (cf. Lemaire, 1987).

Usually persons or households must take the initiative to acquire goods and services marked as part of *individual consumption*. Individual consumption then involves some kind of activity of the population expressed either in money terms (i.e. as a transaction) or in time use. The notion of individual consumption is closely related to the SNA-concept "total consumption of the population". We shall return to this point.

To illustrate the structure of the SEA we introduce the following symbols:

q^1_{kh} = the *quantity* of goods and services belonging to category k = 1,..., K valuable in money terms consumed by population subgroup h = 1,..., H;

q^2_{kh} = the *quantity* of goods and services belonging to category k = 1,..., K not valuable in money terms consumed by population subgroup h = 1,..., H;

v_{kh} = the *value* in terms of money of goods and services belonging to category k = 1,..., K consumed by population subgroup h = 1,..., H;

e_{kh} = the *expenditure* by population subgroup h = 1,..., H on goods and services belonging to category k = 1,..., K;

$Q^1{}_k$ = the *quantity* of goods and services belonging to category k = 1,..., K valuable in money terms consumed by the population (= $\sum_{h=1}^{H} q^1{}_{kh}$);

$Q^2{}_k$ = the *quantity* of goods and services belonging to category k = 1,..., K not valuable in money terms consumed by the population (= $\sum_{h=1}^{H} q^2{}_{kh}$);

V_k = the *value* in terms of money of goods and services belonging to category k = 1,..., K consumed by the population (= $\sum_{h=1}^{H} v_{kh}$);

E_k = the *expenditure* by the population on goods and services belonging to category k = 1,..., K (= $\sum_{h=1}^{H} e_{kh}$).

The quantity q^2 is a physical indicator for all goods and services consumed by the population which cannot be valued exactly, as a rule outputs of informal production or household production. Consequently, the quantity v_{kh} excludes goods and services belonging to $q^2{}_{kh}$. With respect to goods and services acquired in the market the quantity V is valued *inclusive of* the (indirect) taxes (T) levied on these goods en services, but any subsidies (S) granted at the production of these goods and services are not yet subtracted. In other words, the subsidies are added to the market price of the goods or services in question. The reason for this is to be able to show in the SEA explicitly the incidence of consumption subsidies on population subgroups.

With respect to those goods and services that are sold in the market and on which no subsidies are resting, V and E will be equal. As far as subsidies rest on goods and services, it holds that $V_k = E_k + S_k$, where S_k stands for the amount of subsidies on goods and services belonging to category k = 1,..., K. For non-market goods and services acquired by the population, E, of course, is equal to zero. So $E_k \leq V_k$.

For goods and services provided by the government and private non-profit institutions v_{kh} is generally not known. Only the total value V_k will be

known for those (public) goods and services. However, using information on the quantity of public goods consumed by the various population subgroups (q^1_{kh}), the quantity v_{kh} can be computed as follows:

$$v_{kh} = (q^1_{kh}/Q^1_k) * V_k . \qquad (1)$$

The value V_k is in this case expressed in terms of the relevant expenditures by the government or private non-profit institutions.[9] The above way of calculation can be regarded as a fairly good approximation of the valuation (in money terms) of these public goods by individual households, or in this case population subgroups.[10] Naturally, so-called pure public goods, such as national defence, street lighting and environmental protection, are excluded from q^1, since the consumption of these goods cannot be considered *individual* consumption by definition. Goods and services produced by the government and private non-profit institutions included in the magnitude V thus relate principally to so-called mixed goods (or impure public goods). An analogous line of approach can be utilized for certain expenditures by enterprises, namely expenditures on goods and services accruing to employees or the population at large, unless of course the value of these goods and services is already considered wages in kind.

Given the difference between the quantities v_{kh} and e_{kh} the next two consumption concepts are defined in the SEA for the various population subgroups:

(I) *Consumption* of population subgroup h (C^*_h):

$$V_h = \sum_{k=1}^{K} v_{kh}, \text{ and} \qquad (2)$$

(II) *Consumption expenditure* of population subgroup h (C_h):

$$E_h = \sum_{k=1}^{K} e_{kh} . \qquad (3)$$

A problem arises with the classification of the (individual) consumption of the population, being the sum total of consumption expenditure of house-

holds, individual consumption of government, of private non-profit institutions and of enterprises, and consumption from informal or household production. The categories into which all goods and services consumed by the population are classified, should always be the same irrespective of the origin of these goods and services. This categorization serves both for classifying the *value* (in terms of money) of the relevant goods and services and for classifying the *time* individuals or households spend on consumption of these goods and services (particularly in the case of informal or household production). In other words Q^1_k, Q^2_k, V_k and E_k need to be grouped into a uniform classification of categories k. This implies, inter alia, the development of a *functional classification* on the basis of which all goods and services consumed by the population can be classified. In addition, all inputs (in terms of hours) of the population directed at the (own-account) production of goods and services, that lies outside the SNA production boundary, should also be classified on the basis of the same functional classification. Thus, for example, outlays by households on food and time spent by households on cooking a meal should end up in the same function.[11] Consequently, the functional classification serves as a linchpin in setting out the total acquisition of goods and services by the population.

The various purpose classifications proposed within the framework of the SNA do not fulfil the objective of a functional classification for a system of Social Accounts and a coherent set of Social modules. These classifications (sometimes termed "functional" classifications) relate to the classification of household goods and services (United Nations, 1968, table 6.1), the classification of the functions of government (COFOG) (United Nations, 1980) - which replaces the classification of the purposes of government (United Nations, 1968, table 5.3) - and the classification of the purposes of private non-profit bodies serving households (United Nations, 1968, table 5.4). The main objection against these classifications is the disparity which exists between their underlying criteria. The basic feature of a functional classification - as indeed of any proper classification - is a mutual exclusive and exhaustive list of categories, in this case functions and the underlying activities. However, much conceptual work remains to be done, before such a classification will be operational.

Given the two consumption concepts defined above, *benefits in kind*[12] of population subgroup h (B_h) in the SEA are defined as:

$$B_h = C^*_h - C_h . \qquad (4)$$

The concept of benefits in kind serves to bridge the different points of view concerning the measurement of consumption, namely measurement from a welfare theoretical point of view (the magnitude C^*), and measurement aiming at a description of consumer behaviour (the magnitude C). Benefits in kind, therefore, can be regarded as goods and services for individual consumption produced, distributed or paid for by (i) government, (ii) private non-profit institutions or (iii) households, or goods and services for individual consumption paid for by (iv) enterprises. It is obvious, that the magnitude C^* in the SEA is closely related to the concept of "total consumption of the population" developed to supplement the SNA (cf. United Nations, 1977b, sections 5.7-5.9, and Petre, 1983). Consequently, the magnitude C^* lies within the scope of the so-called "beneficiary approach" used in the statistical estimation of consumption. The magnitude C on the other hand lies within the scope of the so-called "expenditure approach".

Naturally, the magnitudes C^* and C in equation (4) need to have the same time of recording. In the SEA, recording at the moment purchases or acquisitions are made, is preferred (the so-called accrual accounting method). In the income and outlay account of the SEA, the concept of consumption expenditure is taken as a point of departure, because this concept is the most appropriate one for describing the socio-economic behaviour of persons and households. It is the most appropriate since it is based on actual money flows.

For certain analyses, such as the study of the effects of taxation, it is useful to present the value of T supplementary to the magnitude E. In this way, the amount of taxes can be shown which rest on consumption expenditures of households. This is for instance of interest, when the incidence of both direct and indirect taxes on different population subgroups are analysed simultaneously.

In addition to the magnitude C^*_h, the consumption of goods and services not valuable in money terms by population subgroup h ($Q^2_h = \sum_{k=1}^{K} q^2_{kh}$) can be shown, expressed, for example, in the number of hours spent by persons on producing the goods and services in question.

5. Links between the National Accounts and the Socio-economic Accounts

It is obvious that the link between the Core system and the Socio-economic accounts is vital for analytical purposes. The role of the SEA as a Social module is, besides supplementing the central economic system, above all to provide a framework for the macro-micro linkages of statistical data on the household sector. Recent contributions have stressed the importance of this linkage (notably Ruggles and Ruggles, 1983 and 1986).

It hardly needs explanation that the link between the SEA and the present-day SNA is rather cumbersome. To maintain the link for the total population between the results in the SEA and the household sector in the National Accounts three so-called intermediary funds had to be introduced in the SEA, i.e. "private non-profit institutions", "pension and life insurance", and "medical consumption" (cf. CBS, 1988, subsection 3.4.3). In the present-day Dutch National Accounts, the *private non-profit institutions* are included in the household sector. However, as the SEA describe transactions of households, income and outlays of private non-profit institutions are not included in the SEA, but attributed to a separate intermediary fund.

Also the treatment of *pension and life insurance* in the SNA gives cause for differences between the SEA and the SNA. As is well-known, the SNA treats the wealth of life insurance companies and pension funds as if it is owned by households. This implies that pension and life insurance premiums (with the exception of the so-called service charge) are treated as savings of the household sector, and pension and life insurance benefits as dissavings. Furthermore, this implies that property income of life insurance companies and pension funds is imputed to the household sector as imputed interest on pension and life insurance reserves (cf. United Nations, 1968, sections 6.36-6.40 and 7.95-7.98). In the SEA, pension and life insurance transactions are treated in a way which is probably more in accordance with the perception of households. Pension and life insurance premiums are recorded as a negative component of disposable income, pension and life insurance benefits as a positive component of disposable income, and the imputed interest on pension and life insurance reserves does not enter the

accounts at all. To achieve this, a intermediary fund "pension and life insurance" is introduced in the SEA, which receives the pension and life insurance premiums from households and the imputed interest on pension and life insurance reserves, and which pays the pension and life insurance benefits to households. The "savings" of this intermediary fund reflect the increase in net equity of households in pension funds and life insurance reserves.

Finally, the attribution of *medical consumption* financed by public or private health insurance to the household sector in the present-day Dutch National Accounts gives cause for a difference in registration between the SEA and the household sector. In the National Accounts the amount of medical outlays for households financed directly or indirectly by public or private health insurance is treated as part of disposable income and consumption expenditure of the household sector. The (compulsory) contributions for health insurance are treated as a negative component of disposable income. In the SEA expenditures on health services not ultimately financed by households are not attributed to households, but to an intermediary fund "medical consumption". The contributions by households for health insurance are treated in the same way as in the National Accounts, i.e. as a negative component of disposable income.

From section 2 it may be clear that the proposed economic Core system overcomes the above-mentioned obstacles with respect to the linkage of the SEA and the SNA. In the new situation, the amounts in the SEA regarding the total population will also appear in the accounts for the household sector in the Core system. This implies furthermore that results from the SEA relevant to the Dutch National Accounts can then simply be incorporated in the system to provide a disaggregation of the household sector (see also the next section).

6. Data and results

In this section we present some results of the SEA and their relation with the data in the Dutch National Accounts. Before presenting some figures it is helpful to make a few general remarks about the outcomes of the SEA.

The statistical unit in the SEA is the *household*. The household is defined as one person or a group of two or more persons who occupies or occupy the whole or part of a housing unit and to provide oneself or themselves with food and possibly other essentials for living.

Choosing for the household instead of the individual as the statistical unit in the SEA is almost unavoidable considering the importance of the information on consumption expenditure in the accounts. For, in statistical practice consumption expenditure is always measured at the household level (cf. in this context subsection 2.3). Besides, attributing household consumption expenditure to individual members of the household is not recommendable on both theoretical and practical grounds (see e.g. Barten, 1987).

In the SEA, the classification of households into *household types* is based on the following five classification variables:

(a) Category of households, i.e. private versus institutional households

(b) Number of household members

(c) Age structure of the household

(d) Main source of income of the household

(e) Income level of the household

Application of these classification variables lead to approximately 50 household types on which information regarding income and outlay is published.

The information in the SEA is - in common with the National Accounts - the result of a process of integrating micro and macro data. In the present SEA, micro data are primarily taken from the Income Statistics and the

TABLE 7. INTERRELATION OF THE SEA, THE CORE AND THE PRESENT-DAY DUTCH NATIONAL ACCOUNTS, 1981

INCOME AND OUTLAY ACCOUNT		Household types by age structure/main source of income					Total households (SEA) a)	Intermediary funds			Household sector (Present-day Dutch National Accounts)
		Without household members of 65 years or over				With household members of 65 years or over		Medical consumption	Pension and life insurance	Private non-profit institutions	
		wages private sector	wages public sector	transfers	entrepren. and property income						
1	2	3	4	5	6	7	8	9	10	11	12
	Number of households (x 1,000)	2051.6	762.6	849.4	341.1	1276.8	5281.5	-	-	-	5281.5
		mln gld									
1.	Compensation of employees b)	130390	55380	5290	7600	2980	201640	-	-	-	201640
	of which:										
1.1.	Wages and salaries	(101550)	(41390)	(3730)	(6010)	(2400)	(155080)	-	-	-	(155080)
1.2.	Employers' social contributions	(28840)	(13990)	(1560)	(1590)	(580)	(46560)	-	-	-	(46560)
2.	Entrepreneurial income	1020	290	360	1520	19660	22850	-	-	-	22850
3.	Interest received	3310	1010	1190	5040	2430	12980	-	-	1240	14220
4.	Other property income received	1080	0	150	2090	1120	4440	-	-	770	5210
5.	Imputed rent of owner-occupied dwellings c)	3280	1360	530	1130	1000	7300	-	-	-	7300
6.	Property income paid in connection with owner-occupied dwellings	5390	2320	390	320	1230	9650	-	-	-	9650
7.	Other property income paid	990	300	140	270	290	1990	-	-	80	2070
8.	Imputed interest on pension and life insurance reserves	-	-	-	-	-	-	-	19960	-	19960
9.	Primary income (= 1+2+3+4+5-6-7+8) b)	132700	55420	6990	16790	25670	237570	-	19960	1930	259460
10.	Unrequited current transfers received	3370	570	8590	4320	360	17210	580	-	4800	22590
11.	Social security benefits	13760	2450	15290	21340	1490	54330	20770	-	-	75100
12.	Pension and life insurance benefits	470	200	3490	7700	2080	13940	-	-13940	-	-
13.	Unrequited current transfers paid	2350	460	640	460	210	4120	-	-	-	4120
14.	Social security contributions	43060	10550	5710	3550	3270	66140	-	-	-	66140
15.	Pension and life insurance premiums	10560	8730	240	680	2080	22290	-	-22290	-	-
16.	Private health insurance premiums	1490	820	70	420	570	3370	-3370	-	-	-
17.	Direct taxes	18390	7560	3410	6610	6210	42180	-	-	-	42180
18.	Disposable income (= 9+10+11+12-13-14-15-16-17) b)	74450	30520	24290	38430	17260	184950	24720	28310	6730	244710
19.	Consumption expenditure	79110	30610	23660	32610	14740	180730	24720	2530	5250	213230
	of which:										
	imputed rent of owner-occupied dwellings c)	3280	1360	530	1130	1000	7300	-	-	-	7300
	service charge insurance d)	.	.	.	.	.	1300	520	2530	70	4420
	health services	500	280	120	190	80	1170	22520	-	-	23690
	contributions to private non-profit institutions	1240	590	320	3870	210	6230	-	-	-6230	-
20.	Saving (= 18-19) b)	-4660	-90	630	5820	2520	4220	-	25780 e)	1480	31480

a) Equals the household sector in the Core system except for differences explained in the text.
b) Derivative transaction in the Core system.
c) Transaction not included in the Core system.
d) Casualty insurance, life insurance and pension funds.
e) Increase in net equity of households in pension and life insurance reserves.

Budget Survey, both compiled by the Netherlands Central Bureau of Statistics. The Income Statistics provide a description of the income distribution for individuals and households. It is not based on a household survey, but on register data, with the administration of the tax-returns as the most important data source. The Budget Survey gives a full description of consumption expenditure patterns of households. It is based on a yearly survey among 2,200 to 3,000 households. However, this sample size is too small to obtain enough observations in each of the household types distinguished in the SEA. Data on consumption expenditure are therefore not based on an arithmetical average of the consumption expenditure of households in the relevant household type, but on an estimated average utilizing regression techniques. The macro data used in compiling the SEA is, of course, compatible with the Dutch National Accounts (see section 5). For a more extensive description of the construction of the SEA the reader is referred to CBS (1988) and Huigen et al. (1989).

Table 7 shows some summary results of the SEA and also shows the link of the SEA with the household sector in the Dutch National Accounts. Besides, the position of the household sector in the Core system is indicated. Only five household types are reported in table 7. First of all, a distinction is made by age structure of the household (i.e. with or without household members of 65 years or over). Households without household members of 65 years or over are further distinguished by main source of income of the household (i.e. wages and salaries from the private sector, wages and salaries from the public sector, transfers, and entrepreneurial income plus property income).

In Table 7 there are a few differences compared with the transactions in the Core system as suggested in Table 3. First, imputed rent of owner-occupied dwellings is included in the SEA, but is excluded from the Core, because, as was argued in subsection 2.2, it is not connected with a monetary settlement. Second, employers' social contributions (current and lump-sum employers' social security and pension contributions plus unfunded social benefits from employers) are recorded as an income flow in the SEA, but are for the greater part no income flow of households in the Core by force of the transactor-transaction principle. Third, wages and salaries in

kind form part of the flow wages and salaries in the SEA. These differences between the SEA and the Core stem from the fact that at the moment the SEA were devised, for practical reasons it seemed appropriate to retain the link with the present-day Dutch National Accounts. Naturally, the implementation of the Core/module concept in the National Accounts will throw a new light on the interrelationship of the SEA and the National Accounts.

Concerning the future development of the SEA, at present research is under way at the Dutch CBS with respect to the consumption of public goods and services by the various population subgroups. Also the incidence of consumption subsidies on population subgroups is investigated (see Van der Werf, 1989). Other components of consumption of the population will come up at a later stage. Naturally, further development of the SEA is to a great extent linked up with future developments surrounding the National Accounts.

7. Concluding remarks

Many statistics we know today originated from the need to analyse a particular phenomenon of political and economic interest. Only gradually the various statistics were made to converge by adoption of commonly shared units, definitions, classifications, valuations etc. The advantages of convergence are obvious. It considerably facilitates the study into the causes of observed facts and thus indirectly increases the quality of forecasting and the effectiveness of policy measures. Also, it allows for the construction of reliable global or 'macro' statistics. The construction of a coherent system of statistics has the additional advantage of showing the fields which are not yet covered by observations.

The process of convergence of the economy-related statistics has been stimulated immensely by the development of the National Accounts. They grew from statistics furnishing some data on aggregate variables into a integrating framework to the economic "base" statistics. Concomitantly, the scope of the National Accounts has been widened and deepened over the years. The inclusion of input-output tables and the opening towards the financial statistics in the 1968 SNA are more recent examples of this enlargement. The question may be asked whether further convergence of statistics around the National Accounts should be put to an end. The eminent National accountant Richard Stone appears to answer this question in the affirmative, at least for the time being (Stone, 1986, p. 468).

We would answer that question differently. It is obvious that the demand for further convergence persists to this day. In respect of the economy-related statistics, e.g. the strengthening of the micro-macro link is advocated with convincing arguments. As it has been argued in the Introduction, there is an urgent demand for a coherent framework including social and environmental statistics. Moreover, our French colleagues have shown both from a theoretical point of view and in practice that the System can be enlarged in a useful way. Finally, to put it in a physicist's words, the SNA has surpassed the 'critical mass'. The process of linking statistics to the SNA cannot be stopped, even if we would want to do so.

It is of utmost importance that the final outcome of these processes is a coherent and practical system of statistics. In our view, the idea originating from Van Tuinen to construct a clear and easily understood economic Core system is therefore a very useful one. It is hard to say whether some of the social and environmental modules which may be designed around the economic Core, will turn out to have a Core character of themselves.[13] The concept of life sequence which may link various social statistics, is interesting in this respect, although not entirely successful. All metaphores derived from astronomics seem to apply, ranging from satellites to double stars and black holes. We should allow ourselves some time to develop this universe gradually. The concept of a Core serves to tidy up the 1968 SNA for such future developments.

Here, preliminary proposals have been put forward as regards the contents of such a Core. It has been demonstrated that the recording of transactions represented in this Core is more transparent and reliable than in the present-day SNA. For various analytical purposes the Core should be supplemented with modules, some of which are mandatory. For the sake of certain types of international comparisons e.g., it may be necessary to add a quite number of attributions and re-routeings, as is recommended by the SNA. The pragmatism of the overall system is favourably influenced by the allowance for some flexibility by alternative classifications of the transactors in the system and by extending the transaction classification. In this paper, this item has been discussed, inter alia, with reference to derivative transactions and the construction of various types of modules. For example, the link between National Accounts data and social statistics is enhanced by the construction of a 'Socio-economic Accounts' module in which a number of economic transactions, notably income and consumption, are specified according to various household characteristics.

Notes

1) A more extensive discussion of this subject is included in Gorter (1988).

2) United Nations (1968), section 2.31.

3) Several well-known derivative transactions cannot be assessed as a balance in a set of co-ordinated accounts without the introduction of re-routeings. For example, the operating surplus as defined in the SNA contains a number of elementary flows which pertain not only to the process of income generation but also to other processes. Examples are employers' contributions to social security funds and pension funds. If these flows are to be recorded in the income generation account *and* in the income distribution account or capital finance account, they are to be re-routed via the household sector.

4) Similar proposals are made in e.g. Stahmer (1988) or Schäfer and Stahmer (1988).

5) See e.g. Vanoli (1986) and Lemaire (1987).

6) The term "Social Accounts" is used in the Netherlands to specify a statistical framework frequently described as a "Framework for the Integration of Social and Demographic Statistics" (cf. United Nations, 1975).

7) See for a recent exposition on Social Accounting Matrices, e.g. Keuning and De Ruijter (1988) or Pyatt (1988). Besides, Keuning and De Ruijter (1988, p. 73) apply the term Socio-economic Accounts to a more wide-ranging system than the Dutch SEA.

8) Naturally, we are well aware that by doing so we are substituting a measure of consumption for a measure of economic welfare. So, economic welfare is considered that part of human welfare which results from the consumption of goods and services.

9) The magnitude V_k is usually equal to the outlays of government or private non-profit institutions relating to the production of not-marketed goods and services belonging to category k (the so-called outlay equivalence value). The question is open whether so-called tax expenditures should also affect the quantity V_k, or that they should be made manifest in relation to (direct) taxes on income and wealth.

10) With regard to measuring the distribution of individual benefits from public expenditures there has been some experience in the Netherlands. For more details the reader is referred to Van 't Eind et al. (1986).

11) In this context function is related to the consequence of an activity (or transaction), and not to the (explicit or implicit) objective that an actor has with the activity (or transaction) in question.

12) Sometimes termed non-cash benefits. The term "benefits" does not necessarily imply that the value of these goods and services should also form part of disposable income of households. As the magnitude C^* is not recorded as an item on the income and outlay account in the SEA, the definition of this concept of consumption has no consequences for the income side of the accounts, in this case disposable income of households. See for further discussion Reich (1987).

13) Some indications in this direction can be found in Bartelmus (1987).

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Available National Accounts Occasional Papers

NA/01 **Flexibility in the system of National Accounts**, Van Eck, R., C.N. Gorter and H.K. van Tuinen (1983).
This paper sets out some of the main ideas of what gradually developed into the Dutch view on the fourth revision of the SNA. In particular it focuses on the validity and even desirability of the inclusion of a number of carefully chosen alternative definitions in the "Blue Book", and the organization of a flexible system starting from a core that is easier to understand than the 1968 SNA.

NA/02 **The unobserved economy and the National Accounts in the Netherlands, a sensitivity analysis**, Broesterhuizen, G.A.A.M. (1983).
This paper studies the influence of fraud on macro-economic statistics, especially GDP. The term "fraud" is used as meaning unreporting or underreporting income (e.g. to the tax authorities). The conclusion of the analysis of growth figures is that a bias in the growth of GDP of more than 0.5% is very unlikely.

NA/03 **Secondary activities and the National Accounts: Aspects of the Dutch measurement practice and its effects on the unofficial economy**, Van Eck, R. (1985).
In the process of estimating national product and other variables in the National Accounts a number of methods is used to obtain initial estimates for each economic activity. These methods are described and for each method various possibilities for distortion are considered.

NA/04 **Comparability of input-output tables in time**, Al, P.G. and G.A.A.M. Broesterhuizen (1985).
It is argued that the comparability in time of statistics, and input-output tables in particular, can be filled in in various ways. The way in which it is filled depends on the structure and object of the statistics concerned. In this respect it is important to differentiate between coordinated input-output tables, in which groups of units (industries) are divided into rows and columns, and analytical input-output tables, in which the rows and columns refer to homogeneous activities.

NA/05 **The use of chain indices for deflating the National Accounts**, Al, P.G., B.M. Balk, S. de Boer and G.P. den Bakker (1985).
This paper is devoted to the problem of deflating National Accounts and input-output tables. This problem is approached from the theoretical as well as from the practical side. Although the theoretical argument favors the use of chained Vartia-I indices, the current practice of compilating National Accounts restricts to using chained Paasche and Laspeyres indices. Various possible objections to the use of chained indices are discussed and rejected.

NA/06 **Revision of the system of National Accounts: the case for flexibility**, Van Bochove, C.A. and H.K. van Tuinen (1985).
It is argued that the structure of the SNA should be made more flexible. This can be achieved by means of a system of a general purpose core supplemented with special modules. This core is a fully fledged, detailed system of National Accounts with a greater institutional content than the present SNA and a more elaborate description of the economy at the meso-level. The modules are more analytic and reflect special purposes and specific theoretical views. It is argued that future revisions will concentrate on the modules and that the core is more durable than systems like present SNA.

NA/07 **Integration of input-output tables and sector accounts; a possible solution**, Van den Bos, C. (1985).
The establishment-enterprise problem is tackled by taking the institutional sectors to which the establishments belong into account during the construction of input-output tables. The extra burden on the construction of input-output tables resulting from this approach is examined for the Dutch situation. An adapted sectoring of institutional units is proposed for the construction of input-output tables.

NA/08 **A note on Dutch National Accounting data 1900-1984**, Van Bochove, C.A. (1985).
This note provides a brief survey of Dutch national accounting data for 1900-1984, concentrating on national income. It indicates where these data can be found and what the major discontinuities are. The note concludes that estimates of the level of national income may contain inaccuracies; that its growth rate is measured accurately for the period since 1948; and that the real income growth rate series for 1900-1984 may contain a systematic bias.

NA/09 **The structure of the next SNA: review of the basic options**, Van Bochove, C.A. and A.M. Bloem (1985).
There are two basic issues with respect to the structure of the next version the UN System of National Accounts. The first is its 'size ': reviewing this issue, it can be concluded that the next SNA must be 'large ' in the sense of containing an integrated meso-economic statistical system. It is essential that the next SNA contains an institutional system without the imputations and attributions that pollute present SNA. This can be achieved by distinguishing, in the central system of the next SNA, a core (the institutional system), a standard module for non-market production and a standard module describing attributed income and consumption of the household sector.

NA/10 **Dual sectoring in National Accounts**, Al, P.G. (1985).
Following a conceptual explanation of dual sectoring, an outline is given of a statistical system with complete dual sectoring in which the linkages are also defined and worked out. It is shown that the SNA 1968 is incomplete and obscure with respect to the links between the two sub-processes.

NA/11 **Backward and forward linkages with an application to the Dutch agro-industrial complex**, Harthoorn, R. (1985).
Some industries induce production in other industries. An elegant method is developed for calculating forward and backward linkages avoiding double counting. For 1981 these methods have been applied to determine the influence of Dutch agriculture in the Dutch economy in terms of value added and labour force.

NA/12 **Production chains**, Harthoorn, R. (1986).
This paper introduces the notion of production cains as a measure of the hierarchy of industries in the production process. Production chains are sequences of transformation of products by successive industries. It is possible to calculate forward transformations as well as backward ones.

NA/13 **The simultaneous compilation of current price and deflated input-output tables**, De Boer, S. and G.A.A.M. Broesterhuizen (1986).
A few years ago the method of compiling input-output tables underwent in the Netherlands an essential revision. The most significant improvement is that during the entire statistical process, from the processsing and analysis of the basic data up to and including the phase of balancing the tables, data in current prices and deflated data are obtained simultaneously and in consistency with each other.

NA/14 **A proposal for the synoptic structure of the next SNA**, Al, P.G. and C.A. van Bochove (1986).

NA/15 **Features of the hidden economy in the Netherlands**, Van Eck, R. and B. Kazemier (1986).
This paper presents survey results on the size and structure of the hidden labour market in the Netherlands.

NA/16 **Uncovering hidden income distributions: the Dutch approach**, Van Bochove, C.A. (1987).

NA/17 **Main national accounting series 1900-1986**, Van Bochove, C.A. and T.A. Huitker (1987).
The main national accounting series for the Netherlands, 1900-1986, are provided, along with a brief explanation.

NA/18 **The Dutch economy, 1921-1939 and 1969-1985. A comparison based on revised macro-economic data for the interwar period**, Den Bakker, G.P., T.A. Huitker and C.A. van Bochove (1987).

NA/19 **Constant wealth national income: accounting for war damage with an application to the Netherlands, 1940-1945**, Van Bochove, C.A. and W. van Sorge (1987).

NA/20 **The micro-meso-macro linkage for business in an SNA-compatible system of economic statistics**, Van Bochove, C.A. (1987).

NA/21 **Micro-macro link for government**, Bloem, A.M. (1987).
This paper describes the way the link between the statistics on government finance and national accounts is provided for in the Dutch government finance statistics.

NA/22 **Some extensions of the static open Leontief model**, Harthoorn, R. (1987).
The results of input-output analysis are invariant for a transformation of the system of units. Such transformation can be used to derive the Leontief price model, for forecasting input-output tables and for the calculation of cumulative factor costs. Finally the series expansion of the Leontief inverse is used to describe how certain economic processes are spread out over time.

NA/23 **Compilation of household sector accounts in the Netherlands National Accounts**, Van der Laan, P. (1987).
This paper provides a concise description of the way in which household sector accounts are compiled within the Netherlands National Accounts. Special attention is paid to differences with the recommendations in the United Nations System of National Accounts (SNA).

NA/24 **On the adjustment of tables with Lagrange multipliers**, Harthoorn, R. and J. van Dalen (1987).
An efficient variant of the Lagrange method is given, which uses no more computer time and central memory then the widely used RAS method. Also some special cases are discussed: the adjustment of row sums and column sums, additional restraints, mutual connections between tables and three dimensional tables.

NA/25 **The methodology of the Dutch system of quarterly accounts**, Janssen, R.J.A. and S.B. Algera (1988).
In this paper a description is given of the Dutch system of quarterly national accounts. The backbone of the method is the compilation of a quarterly input-output table by integrating short-term economic statistics.

NA/26 **Imputations and re-routeings in the National Accounts**, Gorter, Cor N. (1988).
Starting out from a definition of 'actual' transactions an inventory of all imputations and re-routeings in the SNA is made. It is discussed which of those should be retained in the core of a flexible system of National Accounts. Conceptual and practical questions of presentation are brought up. Numerical examples are given.

NA/27 **Registration of trade in services and market valuation of imports and exports in the National Accounts**, Bos, Frits (1988).
The registration of external trade transactions in the main tables of the National Accounts should be based on invoice value; this is not only conceptually very attractive, but also suitable for data collection purposes.

NA/28 **The institutional sector classification**, Van den Bos, C. (1988).
A background paper on the conceptual side of the grouping of financing units. A limited number of criteria are formulated.

NA/29 **The concept of (transactor-)units in the National Accounts and in the basic system of economic statistics**, Bloem, A.M. (1988).
This paper provides a fundamental discussion of the dual actoring as used in the 1968 SNA. Special attention is paid to the transformation of legal entities into units more suitable for economic analysis. Criteria for a precise delineation of the units are formulated. 'Establishment-type units and 'institutional units' turn out to be both institutional, that is both are really decision-making entities.

NA/30 **Regional income concepts**, Bloem, Adriaan M. and Bas De Vet (1989).
In this paper, the conceptual and statistical problems involved in the regionalization of national accounting variables are discussed. Examples are the regionalization of Gross Domestic Product, Gross National Income, Disposable National Income and Total Income of the Population.

NA/31 **The use of tendency surveys in extrapolating National Accounts**, Ouddeken, Frank and Gerrit Zijlmans (1989).
This paper discusses the feasibility of the use of tendency survey data in the compilation of very timely Quarterly Accounts. Some preliminary estimates of relations between tendency survey data and regular Quarterly Accounts-indicators are also presented.

NA/32 **An economic core system and the socio-economic accounts module for the Netherlands**, Gorter, Cor N. and Paul van der Laan (1989).
A discussion of the core and various types of modules in an overall system of economy related statistics. Special attention is paid to the Dutch Socio-economic Accounts. Tables and figures for the Netherlands are added.

NA/33 **A systems view on concepts of income in the National Accounts**, Bos, Frits (1989).
In this paper, concepts of income are explicitly linked to the purposes of use and to actual circumstances. Main choices in defining income are presented in a general system. The National Accounts is a multi-purpose framework. It should therefore contain several concepts of income, e.g. differing with respect to the production boundary. Furthermore, concepts of national income do not necessarily constitute an aggregation of income at a micro-level.

NA/34 **How to treat borrowing and leasing in the next SNA**, Keuning, Steven J. (1989).
The use of services related to borrowing money, leasing capital goods, and renting land should not be considered as intermediate inputs into specific production processes. It is argued that the way of recording the use of financial services in the present SNA should remain largely intact.

NA/35 **A summary description of sources and methods used in compiling the final estimates of Dutch National Income 1986**, Gorter, Cor N. and others (1990).
Translation of the inventory report submitted to the GNP Management Committee of the European Communities.

NA/36 **The registration of processing in make and use tables and input-output tables**, Bloem, Adriaan M., Sake De Boer and Pieter Wind (1990).
The registration of processing is discussed primarily with regard to its effects on input-output-type tables and input-output quotes. Links between National Accounts and basic statistics, user demands and international guidelines are examined.

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