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UNCOVERING HIDDEN INCOME DISTRIBUTIONS: THE DUTCH APPROACH

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Summary

Personal income distribution data based on tax records are afflicted with two major inadequacies: they cover incomplete and systematically biased; and conceptually they were only part of income. The former could be solved to some extent by linking the micro data to the household income of the national accounts. This requires modification of the income concept and delineation of the household sector in the national accounts. The main conceptual inadequacies are that individual benefits of public expenditure are ignored and, second, that the distributional implications of informal production (that can be measured by means of time budget surveys) are neglected. Both inadequacies can be remedied by changing the structure of the national accounts. These should contain a core with a moderate number of household sectors and an income concept that is close to the one employed in income tax records; and a number of modules. The first of these provides a further breakdown of the household sectors in the core. The second one provides, for the same sectors, data on individual benefits of public expenditure. The third module provides, again for the same sectors, informal production data. Together these three modules constitute a system of Socio Economic Accounts.

1. The problem

Personal income distribution has been a major preoccupation of economic statisticians since the days of Gregory King. Yet, the present state of the field is far from satisfactory because of three major gaps in the official statistics of most countries. These gaps are so important that it is no exaggeration to say that 'the' income distribution remains hidden. The first of these gaps concerns the distribution of traditionally defined income. By and large, the latter coincides with the income concepts employed by tax authorities: monetary income. Consequently, the main sources for distributional data are the income tax returns. Most published distributional data are straightforward tabulations of these returns. Next to this, the national accounts contain macro-data on the income of the household sector. Usually there is no direct linkage between these two datasets. This problem is referred to as the micro-macro linkage. It is explored in section 2. The problem turns out to be twofold: improved linkage requires adjustments of macro-concepts that are not always desirable from a macro-point of view; and even if this price is paid, there still will be discrepancies between the macro-data and the aggregate of the micro-data. The two other major gaps in official income distribution statistics are caused by the fact that the traditional income concepts have become outdated. Two trends are responsible for this. The first is the gradual, but substantial, increase over the past few decades of collective expenditure on goods and services of which the benefits accrue to individuals and individual households. Section 3 surveys this. The second trend is the increase in some types of informal production by households, e.g. do-it-yourself activities and the growing awareness that informal production of goods and services should be taken into account, both in aggregate income measures and in distributional data, because it, too, causes divergencies between monetary income and actual availability of goods and services; section 4 discusses this issue.

In case of the second and third gap, the basic problem is that to close them can only be effectively achieved within a comprehensive statistical framework like the national accounts. But this requires, again, adjustment of the latter that may be undesirable from many points of view. To avoid this, a restructuring of the national accounts is necessary. Section 5 briefly explains this and indicates how the resulting system helps uncovering the income distribution.

2. The micro-macro link: primary and secondary income

Why worry about micro-macro linkage at all? If income distribution data are used for distributional analysis and macro-data for their own purpose, why should one want to link them? There are two important reasons. First, the macro-data are usually based on information from more sources than the micro-data. Therefore, in a sense they are better. Second, the macro-data are integrated with data on the production process, on capital financing, and so on. As soon as one wishes to analyse relations between income distribution and these processes, linkage with the national accounts totals is essential.

Therefore, this section discusses the problems involved in this linkage. Broadly speaking, national accounts and tax authorities employ the same income concepts for households or individuals. This concept starts at the income received as a consequence of participation in the production process (e.g. wages, salaries, operating surplus of private unincorporate enterprises), added to this are property income (interest, dividends etc.) whereas costs are subtracted. In some systems of national accounts, e.g. the Dutch system, the result is defined as 'primary income'. Tax systems may not define a similar concept, but all its components are usually on the tax forms. In national accounts, a number of flows are added to primary income in order to obtain secondary income. These flows are: social security contributions and (negatively) net premiums, social welfare benefits, direct taxes (negatively, of course), as well as some other income flows like donations to charities. The resulting secondary income is quite similar to the 'net income' employed in tax data.

This broad similarity of concepts would seem to lead to easy linkage between the national accounts data for the aggregate income of households and the micro-data derived from tax returns. Yet linkage is frequently absent. There are four reasons for this: the coverage differs; in spite of the broad similarity of concepts there are a number of conceptual differences; differences in statistical methodology cause differing results and, finally, statistical discrepancies are caused by black activities and black income flows.

Sources of discrepancies

Differences in coverage come in two kinds. First, the household sector in national accounts is defined more broadly than the sum-total of households or individuals: in some systems of national accounts it includes (mainly for practical reasons) private non-profit organizations working for households, such as churches, labour unions, non-commercial recreational organizations such as sports clubs, charitable organizations (such as the Rockefeller foundation in the US), and so on. The second difference in coverage is caused by the fact that income taxes need not cover all households or individuals. Usually, there is a threshold below which no income tax is levied; moreover, in some countries, e.g. the Netherlands, a part of the households that have only one wage income need not return a tax form: their direct tax is deducted from their paycheck by their employer. Naturally, in the latter case the data can be obtained and added to the statistics derived from income tax returns, but they usually display less details and do not contain such non-labour income components as may be present.

There are a number of differences in concept. We mention just some of the most important. First, the national accounts consolidate most flows between households. Thus, interest payments between households, donations to private non-profit institutions serving households, and so on, do not show up in the national accounts aggregates. In the tax returns they do, at least in principle, but frequently not in such a way that it is possible to separate the flows within the national accounts household sector from those to and from other sectors. Second, the national accounts add a number of items to household income that are absent in tax returns. An example is the increase in the actuarial reserves of life insurances and pension funds. On the other hand, a number of items are added to income in the tax returns that are not treated as such in the national accounts. An example is pensions paid by pension funds. Third, a number of items are valued in a very different way by national accountants and tax authorities. An example is the rent of owner-occupied dwellings; national accounts impute the market value and actual costs whereas tax authorities frequently employ a much lower fictitious rent and do not necessarily subtract costs.

Differences in statistical methodology may cause very important discrepancies. There are several methods for compiling the national accounts aggregate for household income. Some countries employ the income method, which is mainly based on income tax data. In that case the basic methodology of the national accounts and the income distribution statistics is of course the same; but national accountants check their estimates against those from other sources, such as wage data from company and government sources, interest data from banks, and so on; therefore statistical differences with the income tax data are created in spite of the similarity in basic methodology. These discrepancies are exacerbated in countries where national accounting aggregates are compiled by means of the production method. Thus, in the Netherlands the commodity-flow method is employed to derive data on the generation of value added from production surveys. The resulting estimate of value added is then allocated to the different sectors, using various types of data. To some extent, the primary income of the household sector is a balancing item in this method, linked only loosely to income tax based data.

Related sources of differences are tax evasion and other black activities. By definition, black income does not show in the tax returns and hence neither in income distribution statistics that are derived as a straightforward tabulation of the tax forms. In the national accounts, in contrast, a substantial amount of black activities and of black income flows is taken into account. This is particularly true if, as explained above, the basic methodology for compiling the aggregate income of the household sector is not the income method. Thus, the Dutch national accounts measure farm income from crop estimates, value added in construction to a considerable extent on the basis of use of building materials, interest receipts of households on the basis of data on interest paid by banks, and so on. In each of these cases black income paid to households is included implicitly. Moreover, in a number of cases, there is explicit macro-information on black income, which is included in the accounts.

Eliminating the discrepancies

The survey of the main discrepancies between the aggregate income of the household sector and the micro-data based on tax returns, makes clear that it would be very desirable to have a well-defined linkage between the two. The national accounts data are more comprehensive and employ concepts and

evaluations that are more useful for economic analysis; moreover, they are consistent with income estimates for other sectors as well as with production data. The micro-data, on the other hand, provide distributional information that is absent from the national accounts.

One way to improve the linkage, advocated by Ruggles and Ruggles (1986) as well as by Van Bochove and Van Tuinen (1986) and Van Bochove and Bloem (1986) is to alter the national accounts. In particular in two respects. The first concerns the coverage of the household sector. Thus the private non-profit institutions serving households should be removed from the household sector. In the 1968 edition of the UN System of National Accounts (SNA) these are a separate sector, but in the current revision of the SNA they will be included in the household sector again, though as a separate subsector. The reason given for this is the difficulty of obtaining separate data for the non-profit institutions. By treating them as a subsector of the household sector, instead of a separate sector, it becomes more acceptable to consolidate them with proper households if data are absent. This is a step in the wrong direction from the point of view of micro-macro linkage; in the Netherlands the Ruggles' point of view has been adapted. One further step in the same direction is to separate the households with an unincorporate enterprise from those with wage incomes or transfer incomes only: for the former group national accounts and income tax concepts differ more widely than for the latter. Hence separation into separate sectors improves the linkage for the 'pure' household sector.

The second way to improve the micro-macro link, also advocated by the authors just mentioned, is to alter a number of national accounts concepts in such a way that they conform more closely to the micro-concept reflected in the income tax data. Here, one very important step is to deconsolidate income flows within a sector: the income flows should be defined as the total receipts or payments of the households, irrespective of whether the flow is between two households or between a household and a unit in another sector. This proposal has been accepted by the expert group coordinating the revision of the SNA. Another example of a conceptual adjustment is to alter the national accounts treatment of increases in both actuarial reserves of and benefits from life insurances and pension funds in order to conform to that in the micro-data. This redefinition of macro-concepts in order to achieve linkage with micro-concepts has a major drawback: the redefined macro-concepts may well be inadequate from a macro-economic point of view. Therefore a structure of the

national accounts is required that contains both viewpoints; section 5 explains the approach to this problem that is being developed by the CBS.

Ideally, redefinition of macro-concepts leads to an aggregate income for the household sector that is conceptually close to that in the micro-data. Then, as far as concepts are concerned, the published income distribution data or the underlying micro-data could be used by analysts outside statistical offices to disaggregate the national accounts total. This is the approach advocated by Ruggles and Ruggles (1986). However, the Dutch point of view is that this approach is still inadequate, because the two groups of statistical discrepancies that were mentioned above are not taken into account. For some categories of income these discrepancies are sizeable, as shown in a CBS study by Van der Laan and De Waard (1985). Moreover, there is no reason to assume that these discrepancies are 'neutral' in the sense that their distribution over household or individuals is proportional to the distribution of the tax data. Consequently, the 'true' income distribution remains hidden, even if the national accounts coverage and concepts are aligned more closely with those of the micro-data. This means that the distributional data have to be fully integrated with the national accounts. Additional information should be used to achieve this. One example of additional data concerns black income from labour. The CBS has conducted extensive surveys of the latter (cf. Van Eck and Kazemier, 1986); some of the results could be used to bridge the micro-macro gap.

3. Individual benefits of collective expenditure

Since the first systems of national accounts were designed in the late 1940's, the role of government in the economy has expanded considerably. National accounts have not yet been able to catch up. Implicitly, the existing systems of national accounts accommodate only three main roles of government:

- i) providing 'pure' collective goods and services
- ii) establishing an equitable income distribution
- iii) carrying out industrial and employment policies.

Pure collective goods and services are those commodities of which the benefits do not accrue to specific individuals, but to society as a whole. The classic example is defense outlays. The national accounts take the point of view that all goods and services produced by government are purely collective: they are all consumed by the government. The second purpose of government is evident in the national accounts in the form of direct taxes and social welfare contributions and grants. The third role of government is visible in national accounts in the form of e.g. subsidies to industries.

In the past half century, however, government has assumed another role that has become of considerable importance: controlling consumption. There are two aspects to this role. First, government may consider it desirable to raise (or, for that matter, depress) national consumption of a group of goods or services to a level that differs from the one that results if the market is left to its own devices. Second, the government may wish to stimulate consumption of a group of goods or services by specific groups of households, in order to achieve an equitable distribution of consumption of the commodities concerned, in addition to the purpose of an equitable overall income distribution.

A wide range of instruments has been developed to achieve these consumption policies. Government may undertake to produce the commodities concerned by itself; it may also subsidize the producers, either by means of lump-sum transfers or by sales-linked subsidies; it may route subsidies directly to households, for example in the form of reimbursement schemes. Each of these instruments may or may not have distributional consequences.

Because the national accounts do not explicitly or implicitly identify the consumption-controlling role of government, its effects on commodity consumption and on its distribution are obfuscated. Transactions that are made for consumption controlling purposes are treated as though they served one of the other three purposes. A perfect example is the treatment of subsidies on rented dwellings in the Dutch system of national accounts. There are several types of these subsidies. In the national accounts three groups are distinguished and each of these is treated differently. First, there are operating subsidies for lessors of certain classes of dwellings (particularly part of the cheaper ones). These are treated as production subsidies. Second, there are subsidies to lessors when they invest in new dwellings; these are treated as capital transfers. Third, there are subsidies to individual households, depending on the level of their income and on their rent; these are treated as social welfare grants. Hence, in spite of the fact that these three groups of transactions can be considered to have much the same effect and, to a degree, the same aim (i.e. raising consumption of housing services and, in a sense, income, of specific socio-economic groups) they are treated quite differently.

The consequence of the failure of the national accounts to recognize the role of government in controlling consumption, is that total secondary income of the household sector does not reflect the total value of the goods and services households can obtain without borrowing; the latter is the income concept advocated by Hicks: how much can you spend without being worse off at the end of the period. Similarly, the role of government implies that total household consumption does not represent the total value of the goods and services that are actually made available to individual households. Consequently, two new concepts are required: tertiary income and total consumption of households. These two concepts differ substantially from the traditional national accounts concepts. Two important differences are:

- i) A considerable part of what is now regarded as government consumption does not consist of pure collective commodities but of commodities of which the benefits accrue to specific households or individuals. Examples are public education, public cultural services, public health services, and so on.
- ii) In many instances, subsidies to private producers are essentially consumption subsidies (e.g. in the case of public transport, in the case of housing subsidies explained above). The national accounts concept of household consumption is defined 'at market prices'. This amounts to the

producers' price less the consumption subsidy. Consequently, this concept of consumption at market prices underestimates true consumption, as is immediately evident in the case of two commodities that are more or less close substitutes but of which only one is subsidized.

As yet, it is not yet decided precisely how the revised UMI System of national accounts will incorporate these new concepts in the accounts. To incorporate them completely will raise a host of problems: precisely which government-produced commodities are actually non-collective; what is the delineation (if there is any meaningful delineation at all) between consumption subsidies and production subsidies; should outlays of enterprises, such as training schemes and other facilities for employees, also be reclassified as household consumption; and so on. Moreover, replacing the present concepts by the novel ones would lose the same linkage between micro(tax based)-concepts and macro-concepts that the conceptual changes discussed in the preceding section were designed to improve. Once more, the solution is to integrate both approaches in the system, cf. section 5.

Thus, recognition of the role of government in controlling consumption has considerable impact on the national accounts aggregates. It has an even greater impact on the distribution of income between households: government expenditure on each commodity and subsidies benefit households with specific socio-economic characteristics. In the Netherlands, the Social and Cultural Planning Bureau has done research on these distributional consequences (cf. e.g. SCP, 1981). Using indicators of the use of government-produced or -subsidized commodities, government expenditure can be attributed to specific groups of households. Thus educational and cultural expenditure appears to benefit particularly households in the upper income brackets and (low income) student households, at least if the (debatable) assumption is adopted that education and cultural activities are non-collective goods. Social services and health care, in contrast, apparently benefit the lower income groups. The distributional consequences may also be analysed from different points of view, such as household composition and other socio-demographic indicators.

4. Distributional implications of informal production

In pre-industrial and early industrial societies there is a large informal economy: a substantial part of total output is not sold for money but remains in the household or is traded by barter. This is particularly true for agricultural production and processing of primary products. As the level of development rises, this informal production is gradually drawn into the formal economy. Thus, in developed countries almost all agricultural production and primary product processing is monetized. Naturally, this development leads to incomparability - over time and between countries with different levels of development - of national income, gross domestic product and so on, if the latter would include marketed production only. Therefore, in the UN System of National Accounts this informal production is included in total production, the valuation being at the market price of the equivalent products that are sold for money. Similarly, the informal production cannot be neglected in inter-household comparisons: generally speaking, the lower its monetary income and the more 'rural' the household is, the higher its informal production and its consumption of these own-account products. Consequently, to obtain a correct picture of the distribution of consumption and, in a sense, of income, the informal output should be taken into account. This is precisely what is done in the social accounting matrices that are now becoming the major statistical tool for the design of development strategies and economic policies in many developing countries.

Though informal agricultural production is insignificant in developed countries, other types of informal production have become much more important in recent decades. This is particularly true of do-it-yourself activities. A plausible explanation of this trend is the increase in tax rates and the level of social security contributions. This increase has, to a considerable degree, chased repair and maintenance of dwellings out of the formal economy. This process has, in turn, generated new formal activities, viz. the production of products facilitating do-it-yourself. These products, and their gradual technological improvement, represent a form of induced innovation that has made the shift towards do-it-yourself irreversible, at least to a certain extent. Consequently, the problem of a considerable informal production with intricate linkages with formal production is here to stay. This makes it imperative to provide an adequate statistical description of this type of informal production. Something similar appears to have happened in case of a number of

services. Examples are retail trade services, laundry services, and so on. In addition to this, there are a number of services which have always been produced by the household for its own use: household activities, raising children and so on. Moreover, there are a lot of interhousehold services that do not lead to money flows and are, consequently, to be considered as informal: volunteer work, helping neighbours and family with several activities, and so on. These activities have never been included in official statistics on production, consumption and income.

One reason for this is that economic statistics have been heavily influenced by economic theory; in a dominant part of economic theory households are viewed as consumers only, not as producers. The 1968 edition of the SNA departed from this view by defining households institutionally, i.e. it included unincorporated enterprises in the household sector for which income and outlay accounts are made. But the 1968 SNA did not go all the way: it included only income from formal household production (i.e. that of unincorporate enterprises) and that from the limited number of informal activities indicated above. In the 1970s the exclusion of informal production came to be criticized. Partially, this was caused by their increased significance, partially by developments in economic theory. Thus, the emergence of the 'new home economics' led to an increasing awareness of the productive roles of households.

This criticism of the national accounts has, however, not led to changes in the accounts' concepts. One important reason for this is that it is quite difficult to decide upon the proper valuation of informal services. By definition, they are not sold; hence the market does not directly provide a price-tag for them. In the case of informal agricultural production this problem is easier, because goods that are fully comparable to those informally produced are sold in the market. The prices of the latter can be applied to the former. In the case of informally produced services this approach is more troublesome. Though in many cases services that are similar to the informal ones are being sold in the market, it is often not easy to pin down an exact price for each service. This problem, the measurement of the 'quantity' of output of formal services, is now being tackled by economic statisticians. The basic approach is to design a detailed classification of services first. Once the latter has been established, the problem of quantities and prices becomes far more tractable. In the case of informal services the problem is the other

way around: quantity information can be obtained, but prices are needed to calculate values. The development of a 'services classification' will facilitate this too, provided the classification is designed with this purpose in mind.

For the time being, however, the change in the volume of formally produced services is mostly measured by deflating the value of the services with prices of inputs such as wage rates. Consequently, the only way to calculate the value of informally produced services would be to assign a value to the amount of labour they require. But the latter would lead to very arbitrary values, because it is unclear which wage rates should be employed. As a consequence, the resulting aggregates, like GDP and national income, would be of limited use. To avoid this, national accountants prefer a more restrictive delineation of production, even in the case of non-service informal production like do-it-yourself activities.

Naturally, this 'solution' does not solve the problem that a considerable and non-constant part of production is informal and should be measured in order to obtain a comprehensive picture. This problem is even more troublesome from a distributional point of view: it is quite clear that informal production is not uniformly distributed over households. Households where all members have formal jobs have less time available for informal production than households of which every member is unemployed; there are systematic variations of informal productive capacity with age and occupational skills; and so on. Consequently, one may suspect that accounting for informally produced goods and services leads to a different picture of the total availability of goods and services. Put differently, taking account of informal production may lead to a different income distribution. Therefore, disaggregated quantity data on informal production are needed, even though it remains impossible, or unadvisable, to transform them into value estimates. In the case of services, these quantity data would amount to data on the time spent on the production of a range of specific activities.

Such data are absent in traditional economic statistics. Probably, the fact that informal production is not taxed has something to do with this. In recent years, however, more information has become available, due to the development of time-budget surveys: surveys of the way households, or individuals, spend their time. But unfortunately, most time-budget surveys are not geared to the

measurement of informal production and its distributional characteristics. Instead, they focus on the use of time as such and devote a lot of attention to e.g. recreation. With such a wide focus, one obtains classifications of time use that differ from those that are most suitable when measurement of informal production is the main purpose. For example, time spent knitting in the waiting room of a doctor may be classified as 'waiting' in a general-purpose survey but should be classified as 'knitting' in a survey geared to measuring production. Similarly, the classification of households in a general purpose survey may differ considerably from the one required for an analysis of income distribution. For this reason, the CBS has decided to develop a time-budget survey that is explicitly designed to capture informal production and its distributional input. In practice this implies three things:

- In the case of multiple time use ('knitting in the waiting room') the time is classified as productive as soon as one of the activities concerned is productive.
- The classification of time use is such that, as far as feasible, comparability with the Dutch version of the ISIC is achieved while at the same time the type of service or good can be identified.
- Households are classified such as to admit linkage with income distribution data within a comprehensive framework of social and economic accounts.

5. Households in an integrated meso-system

In each of the preceding sections we encountered cases where economic statistics are 'damned if they do and damned if they don't': the conflicting demands placed on macro-data by macro-economic theory and by the need for micro-macro linkage; by the latter and the need to take individual benefits of collective expenditure into account; and by the need to know the impact of informal production on both aggregates and income distribution without spoiling the interpretability of the resulting concepts by arbitrary valuations. In each of these instances there is a danger that the difficulty of choice leads to paralysis. Nor is compromising an alternative option. The present System of National Accounts takes this route: some informal production is included (this is called 'imputations'), but much more is excluded, as discussed in section 4. As a result, the production concept actually employed is not well suited to deal with total production, but equally unsuitable for dealing with formal production. Similarly, the present SNA reroutes a lot of income flows, e.g. those related to pension funds, in ways that differ from the money flows (this is called 'attributions'), but neglects to make attributions to show, e.g., how much collective expenditure is actually household consumption. As a consequence, the system is not suitable for linkage with micro-income data, but also unuseful for an analysis of actual household consumption.

Naturally, it is not impossible to integrate all these points of view and alternative concepts into the system. But this would result in an impossibly unwieldy structure. Therefore, the CES has proposed a modular approach to the national accounts and is working on its full development, aiming to adopt it gradually. In this approach the national accounts are reorganized into a 'core' and a set of 'modules'. The core is an institutional system, that is a system where concepts and valuations are

- close to micro-concepts in order to achieve easy linkage with the latter
- close to monetary flows, in order to avoid problems of valuation and achieve easy interpretability.

Consequently, the core differs substantially from the present system of national accounts, particularly in its treatment of households: it contains no imputations and no attributions.

The core serves as the coordinating framework for a (considerable) number of modules. To this end, it is essential that the core has a well defined 'meso-structure': in the context of the present paper, two elements of this meso-structure should be mentioned. The first one is the commodity classification. Production, consumption, foreign trade in the core are detailed into one uniform commodity classification of goods and services by their nature. The second element of the meso-structure that is relevant here is a breakdown of households into a (not too large) number of groups. The choice of these groups should be made primarily for analytical purposes and with the coordinating role of the core in mind. In addition, the point of view of data construction is important. Thus, households with an unincorporate enterprise need to be identified separately, because information on their income is available in both production surveys and in income tax data; comparing these may increase the quality of both production and income data. Similarly, a breakdown of households into groups with distinctly different consumption patterns may improve both the data on their consumption - based on budget surveys - and the estimate of national consumption and production of specific commodities. Therefore, the 'core' of the national accounts could eventually include a breakdown of households into some groups, their choice determined by the possibilities to integrate data from very different sources and by the requirement that the national accounts provide a comprehensive description of the economic process. This breakdown, however, is too limited from the point of view of the use of the disaggregated data. Therefore, a module is needed in addition to the core. This module contains a much more detailed breakdown of the household sector: by socio-economic category, type of household, primary or secondary income bracket, and so on. This breakdown is akin to the one employed in social accounting matrices. The compilation of income data for these groups starts at the aggregates for the household groups to be distinguished in the core, and disaggregates them on the basis of micro-data for the household groups concerned. A second module contains the information necessary to record consumption on the basis of the principle of consumption by the beneficiary. It contains the same commodity breakdown as the core and the same breakdown into groups of households as the first module. Consequently, this 'consumption by the beneficiary' module shows how much of the value of each commodity produced or subsidized by government is actually consumed by each group of households. Thus, this module shows the tertiary income distribution.

A third module will account for informal production and consumption of the

goods and services concerned. Once more it will employ the same commodity breakdown as the core. For each commodity it shows how much time is spent on its informal production. Then, for each commodity, both consumption from formal production (in money terms) and from informal production (in labour time) are given. Naturally, this module once again contains the same household groups as the two modules mentioned before. Consequently, an indication of the impact of informal production on income distribution is immediately obtained. Some alternative valuation measures could be added and an unambiguous valuation may become possible once a service classification has been developed, cf. section 4.

Taken together, these three modules form a system of socio-economic accounts that provides a complete description of the distribution of income, both primary, secondary, tertiary and 'informal', as well as a complete description of the distribution of consumption, saving and so on. At present, compilation of a first version of such a system is being finalized. This first version, containing about 40 household groups, is similar to the first of the three modules described above. It is integrated with the present national accounts aggregates since the complete restructuring into a modular system requires a fairly long period of time.

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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 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*, Eck, R. van (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)
In this paper 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 compiling 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*, Bochove, C.A. van and H.K. van Tuinen (1985)
This paper examines the purposes of the SNA and concludes that they frequently conflict with one another. Consequently, 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 full-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*, Bos, C. v.d. (1985)
In this paper, the establishment-enterprise or company 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. The proposed approach contains perspectives on further specification of the institutional sectors,

households and non-financial enterprises and quasi-corporate enterprises.

- NA/08 *A note on Dutch National Accounting data 1900-1984*, Bochove, C.A. van (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*, Bochove, C.A. van 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)
The economic process consists of various sub-processes, each requiring its own characteristic classification when described from a statistical point of view. In doing this, the interfaces linking the sub-systems describing the individual processes must be charted in order to reflect the relations existing within the overall process. In this paper, this issue is examined with the special reference to dual sectoring in systems of National Accounts. 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 chains 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*, Boer, S. de and G.A.A.M. Broesterhuizen (1986)
This paper discusses a number of aspects of the procedure according to which input-output tables are compiled in the Netherlands. A few years ago this method underwent an essential revision. The most significant improvement means that during the entire statistical process, from the processing 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. Data in current prices first used to be compiled and data in constant prices and changes in volume and prices used to be estimated only afterwards. With the new method the opportunity for the analysis of the interrelations between various kinds of data, and thus better estimates is used.
- 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*, Eck, R. van 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*, Bochove, C.A. van (1987)
- NA/17 *Main national accounting series 1900-1986*, Bochove, C.A. van 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*, Bakker, G.P. den, 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*, Bochove, C.A. van and W. van Sorge (1987)
- NA/20 *The micro-meso-macro linkage for business in an SNA-compatible system of economic statistics*, Bochove, C.A. van (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*, Laan, P. van der (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 than 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.

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