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IMPLEMENTING THE REVISED SNA IN THE DUTCH NATIONAL ACCOUNTS[*]

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Abstract

This paper discusses the implementation of the new United Nations guidelines on national accounting (SNA) in the Netherlands. The changes in basic concepts and classifications in the SNA will probably be implemented during a revision over 1995. The changes in scope will be introduced gradually. Important changes scheduled for the near future are the incorporation of balance sheets, an environmental module and a Social Accounting Matrix.

Contents

1. Introduction

The United Nations provide guidelines on the concepts, classifications and scope of the national accounts (the SNA). The drafting of the revised SNA has just been completed. Now it is time for the national statistical offices to bring the new SNA into practice. This paper lists some plans regarding the implementation of these new guidelines.

In a systematic discussion of the implementation of the 1993 SNA, it is convenient to regard the Dutch national accounts and the SNAs as partly overlapping circles. Diagram 1 shows the relationship between the Dutch national accounts 1991 (DNA 1991) and the 1968 SNA. To a main extent they overlap and coincide (area A). However, there are also differences (areas B and C).

Diagram 1. The relationship between the 1968 SNA and the present Dutch National Accounts.
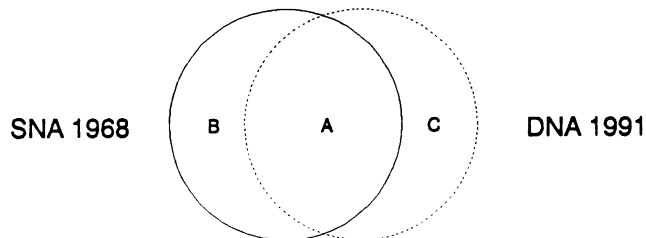
Various types of differences are possible:
- Differences in basic concepts and classifications;
- Differences in detail and supplementary classifications;
- Differences in scope, e.g. the use of alternative concepts or additional accounts and tables.

Basic concepts can be defined as those pertaining to the definition

of production, intermediate consumption, final consumption, capital formation, primary income, secondary income and financial flows. The main classifications by commodity group, economic activity and sectors can be regarded as the basic classifications[1]. With respect to these basic concepts and classifications, the SNA is followed rather strictly in the Netherlands[2]. For example, the SNA production and asset boundaries are employed in calculating national income. Similarly, the ISIC is the basis for the Dutch classification by economic activity. This is also stimulated and enforced by the international organizations (UN, EC, OECD).

Some differences in basic concepts and classifications may be easy to eliminate. However, most differences occur due to the absence of reliable data and will therefore be more difficult (costly) to eliminate.

As a consequence of differences in basic concepts and classifications, the international comparability of core national accounts figures[3] may be affected. Cases in point are value added by economic activity/sector and national income in constant prices.

With respect to the scope, the SNA is less prescriptive and it serves a different role. Countries do not implement the whole system. They set their own priorities in compiling the national accounts. The only clear restriction is that at least the figures for the questionnaires of the United Nations should be provided. As a consequence, there are a lot of differences in the scope of the national accounting systems in the

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1. The basic classifications do not include the more detailed classification by commodity group, economic activity and sectors, e.g. the classification by subsectors or sub-subsectors. Difference with respect to such detailed classifications are generally best regarded as differences in detail or scope.
2. Of course, in as far as the basic concepts are not operational or vague, they can not be followed strictly. This is a major problem of the 1968 and revised SNA. The revised SNA should therefore be complemented with more operational guidelines which take account of data compilation possibilities, e.g. the (revised) guidelines of the EC ESA (see Bos, 1993, pp. 87-90).
3. A distinction can be made between:
   - National accounts figures published by the national statistical offices;
   - National accounts figures submitted to the international organizations; these figures may be corrected by the national statistical offices for some specific differences with the international guidelines (see e.g. CBS, 1993, pp. 109-118).

various countries. For example, only in a very limited number of coun-
tries (including the Netherlands), input-output tables and financial
accounts are published annually.

A similar remark pertains to the amount of detail in the classifi-
cations and the use of additional concepts and classifications. Cases in
point are e.g.:
- The national classification by economic activity can be based on the
  three or four-digit ISIC level;
- The national classification by economic activity can contain some
  specific national subclasses;
- Government expenditure can be classified by purpose (this is not
  mandatory).

Differences in detail and scope reflect to a main extent differences
between national data needs and compilation possibilities. Enlarging
the scope and detail of national accounts systems may be hampered by a
lack of resources.

The Dutch national accounts and the 1968 SNA coincide largely but not
fully with respect to concepts, scope and detail. As a consequence,
changes in the SNA can not directly be related to changes in the Dutch
national accounts. For example, some concepts that are new in the
revised SNA are already incorporated in the Dutch national accounts,
e.g. chain indices. Furthermore, for the purpose of this paper, it also
seems useful to discuss compliance with the revised SNA for those
concepts already present in the 1968 SNA.

The relationship between the Dutch national accounts (in present and
future) and the revised SNA is rather complex. The scope of the 1993
SNA is substantially extended in comparison to that of the 1968 SNA.
Cases in point are the introduction of subsectoring of households,
balance sheets, satellites/modules and the concept volume of labour. The
comparison is made even more complex by the scheduled extension of the
scope of the Dutch national accounts. Scope and detail of the present
Dutch national accounts will be discussed shortly in section 2.

In section 3, compliance with the 1968 SNA is discussed. In fact, we will limit ourselves to what will be retained in the revised SNA.

The implementation of the changes in the SNA is the topic of section 4. Three cases can be distinguished:
- The change is already incorporated in the Dutch national accounts, e.g. chain indices.
- The change will be incorporated in the Dutch national accounts, e.g. Social Accounting Matrices.
- The change will not be incorporated in the Dutch national accounts.

Section 5 shortly discusses foreseen changes in the Dutch national accounts that are not related to the revised SNA or that deviate from its recommendations. Conclusions are drawn in section 6.

2. Scope and detail of the present Dutch national accounts

In discussing scope and detail in present and future Dutch national accounts, we will confine ourselves to annual national accounts figures pertaining to the nation as a whole. No attention will be paid to regional figures, quarterly accounts or other short term figures.

The Dutch national accounts 1991 (CBS, 1992)[4] were available in July 1992. They consist of:

1. Tables with the most recent figures on major macro-economic aggregates: final estimates on 1989, re-estimated provisional figures on 1990 and provisional figures on 1991.

2. Tables with historical time-series on major macro-economic aggregates. The period covered is 1921-1991.

3. A detailed set of national accounts with final figures on 1989, re-estimated provisional figures on 1990 and provisional figures on 1991. The sectors distinguished are:
   * Non-financial Enterprises;
   * Credit Institutions;
   * Insurance Companies and Pension Funds;
   * Central and Local Government;
   * Social Security Funds;
   * Households.

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4. In 1992, a revision of the Dutch national accounts has been completed. This encompassed various types of changes:
   - New data sources and improved compilation methods were used for estimating up-to-date levels. In compiling the Dutch national accounts priority is given to the estimation of correct figures for changes. The estimates of the levels are made up-to-date during revisions. (on the strategy of continuity, see Bos, 1992b, p. 6 and Bos and Gorter, 1993, p. 7).
   - Changes towards a more institutional system of national accounts. This pertains to estimation as well as presentation, e.g. with respect to the registration of trade and the use of supply and use-tables. The introduction of the institutional sector classification is a major change in presentation (see also section 3.1).
   - Changes in concepts other than those toward a more institutional system. A case in point is the registration of VAT on accrual basis instead of on (delayed) cash basis.
   - In 1993, detailed supply- and use tables are published (in addition to input-output tables). This can be regarded as an extension of the Dutch system of national accounts.

The accounts employed for each sector are:

* Goods and Services Accounts;

* Primary Income Accounts;

* Secondary Income Accounts;

* Final Consumption Expenditure Accounts;

* Capital Formation Accounts;

* Capital Transfers Accounts.

In each account, the transactions are recorded by sector of origin and destination in order to show the interactions between sectors (the "R-series of accounts"). In addition to this set of sector accounts, for the Income and Capital Accounts, a more detailed specification of transactions is shown. However, this detail is only possible when the specification by sector of origin and destination is left out. The latter is therefore absent in these supplementary accounts ("S-series of accounts").

4. An institutional accounting system[5]. This includes also Production Accounts and Financial Accounts[6].

    A major difference between the institutional accounting system and the other accounting system is the sector classification. In the institutional system, the household sector includes all the transactions of the self-employed and the imputed services of owner-occupied dwellings. In this respect, it complies with the sector classifications in the 1993 SNA. The valuation of output and value added in the production accounts is at basic prices as recommended in the revised SNA.

5. A National Accounts Matrix (see also Keuning and De Gijt, 1992). In this matrix, the data from the institutional accounting system are put in a matrix-format. Supply- and use-tables are also incorporated. For 1987 and 1988, only very aggregate figures are presented. A more detailed matrix is shown for 1989. Its make and use table distinguishes 22 commodities and 10 economic activities (including a nominal one for the use of imputed banking services).

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5. The institutional accounting system is a novelty in the 1991 National Accounts, see note 2.
6. Financial accounts have been published since the 1985 National Accounts.

6. Input-output tables distinguishing 60 economic activities for the years 1987-1989. The input-output tables are both in current prices and in prices of the previous year.

7. Supplementary tables with more detail, alternative classifications or additional information are provided for various transactions and by economic activities.

The production structure of the Dutch economy is presented in more detail in a separate publication (CBS, 1993). Extended supply and use tables distinguishing, 750 commodities and 200 kinds of activities (in current prices and in prices of the previous years) are available on floppy disk.

The Dutch national accounts figures in constant prices are fully based on chain indices[7]. This is also a new recommendation in the revised SNA.

In line with the revised SNA, the Dutch national accounts also contain figures on national income (in current and constant prices).

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7. Chain indices have already been employed in the Dutch national accounts since the 1984 National Accounts (see Den Bakker, 1992, p. 23). For a theoretical background to the preference for chain-indices see Al et al., 1985.

3. Attaining compliance with the 1968 SNA

At present, the Dutch national accounts do not fully comply with the 1968 SNA and there are differences in basic concepts, scope and detail.

Table 1 contains a listing of the differences in basic concepts. It appears that these deviations are all rather insignificant in terms of their size. After the new revision of the Dutch national accounts, all (most of) these differences will be eliminated.

Table 1. Differences in basic concepts between the present Dutch National Accounts and the 1968 SNA (see also Bos and Gorter, 1993, p. 131 and CBS, 1993, pp. 109-118).

1. No estimate of the produce of allotments is included.
2. No estimates are made for the Dutch ownership of dwellings abroad or of foreign ownership of Dutch dwellings (e.g. holiday homes of Germans). In principle, the imputed rents should be recorded as property income flows with the Rest of the World.
3. No full gross registration of wages with the Rest of the World.
4. The sectors Households and Private Non-Profit Institutions serving households have been consolidated.
5. Oil and uranium exported or imported for processing and re-imported or re-exported thereafter are recorded gross.

The implementation of a classification of government expenditure by purpose is scheduled for 1993. This extension was already recommended by 1968 SNA.

4. Implementing changes in the SNA in the Dutch national accounts

4.1 Introduction

The changes in the SNA are listed in Harrison (1992) and UN (1992, Annex on changes). In this paper, we have confined ourselves to the changes that are relevant for the Netherlands. This implies e.g. that the new recommendation to record the unpaid carrying of water as production is ignored.

In this section, changes in the SNA are distinguished into:
- changes in basic concepts and classifications (section 4.2);
- changes in scope and detail (section 4.3).
This distinction is fundamental in deciding on the timing of their implementation.

The changes in basic concepts and classifications have to be implemented simultaneously during a revision. Three reasons can be given:
- Without simultaneous implementation, the national accounts figures would be based on neither the old SNA nor the new SNA during the transition period. This would seriously hamper international compari-bility during this period.
- A simultaneous implementation limits the disruptions in times series. As a consequence of a simultaneous revision, times series have to be re-calculated only once.
- Changes in concepts and classifications are a burden for users of national accounts figures, as they have to get used to the new concepts and classifications. Simultaneous implementation limits this burden.

These arguments are less important for changes in scope and detail. The latter type of changes can therefore be implemented gradually.

4.2 Changes in basic concepts and classifications

In discussing the implementation of changes in basic concepts in the SNA, three categories can be distinguished:
- Concepts and classifications already implemented in the Dutch national accounts;
- Concepts and classifications that will be implemented in the Dutch national accounts in the near future;
- Concepts and classifications that will not be implemented in the Dutch national accounts in the near future.

Table 2 contains a listing of the first category.

Table 2. Changes of basic concepts in the SNA already implemented in the Dutch national accounts

1. Chain-linking is recommended as a standard practice for calculating flows at constant prices.
2. The concept of real net national income will be introduced.
3. In the compilation of price indexes and constant prices series, identical goods or services sold at different prices should not be treated as being of different qualities when there is no freedom.
4. The concept of financial leasing will be introduced explicitly.
5. In the Production Account output can be valued at basic prices.
6. The treatment of VAT will be made explicit and net recording recommended.
7. Measurement of real output of non-market services should be based whenever possible on output indicators.
NB. Changes in terminology:
   - The distinction between commodities and other goods and services will be dropped
   - Gross National Product will be renamed Gross National Income.
   - Gross Output will be replaced by Output

In deciding on concepts and classifications that will be implemented in the future Dutch national accounts, it seems useful to subdivide the other changes in basic concepts and classifications in the SNA into:
- Changes in the SNA easy to implement;
- Changes in the SNA that require some additional statistical work;
- Changes in the SNA that require a substantial amount of statistical work or new data sources.
These three categories are listed in tables 3, 4 and 5.

Table 3. Changes in basic concepts in the SNA simple to implement in the Netherlands.

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1. Expenditure on <u>military durables except offensive weapons</u> should be registered as capital formation.
2. In the Rest of the World-account, <u>imports</u> of merchandise should be recorded <u>fob</u> (instead of cif).
   In a classification of imports by commodities, cif valuation may still be employed.
3. The <u>value of production of non-life insurance companies</u> should include the revenues on money
   invested. As a consequence, the use of the services of non-life insurance companies should also be
   raised by this amount.
4. A distinction between market and non-market output will be introduced.
5. Government licenses and fees will be treated as taxes or fees for services in accordance with
   conventions in the IMF's Government Finance Statistics
6. Treatment of pension contributions and benefits as current transfers affecting disposable income of
   households.
N.B. Changes in terminology:
   - The terms "commodity taxes" and "other indirect taxes" will be replaced by the expressions "taxes
     on products" and "other taxes on production".
   - The term "direct taxes" will be replaced by "current taxes on income, wealth, etc.".
   - The term "capital transfers to government, including estate and gift taxes and non-recurrent taxes on
     property" is renamed "capital taxes".

Changes in the SNA that are easy to implement constitute mainly of
changes that require a reclassification of existing information. This
pertains e.g. to the expenditure on military durables (except offensive
weapons), fob valuation of merchandise imports and the concepts of final
and actual final consumption.

Table 4. Changes in basic concepts of the SNA requiring additional statistical work

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1. Expenditure on mineral exploration (incl. the compensation of employees involved) should be recorded as capital formation (and production of such an asset).
2. Expenditure on the development or purchase of computer software should be recorded as capital formation.
3. Inventories held by government will be extended to all inventories held, not just strategic materials.
4. Financial auxiliaries will be included in the financial corporate sector
5. The new SNA employs a twin set of final consumption and disposable income concepts: final consumption expenditure and disposable income on the one hand and actual final consumption and actual disposable income on the other. Final consumption by the government is divided into two parts: individual goods and services and collective services. Actual final consumption by households is defined as the sum of final consumption expenditure by households plus consumption expenditure on individual goods and services by the government plus all services of Non-profit institutions serving households. Actual final consumption by the government is equal to the government expenditure on collective services.
6. The item mixed income will be introduced to replace operating surplus as the balancing item for unincorporated enterprises.
7. Reinvested earnings of foreign direct investment will be introduced for consistency with balance of payments data.
8. Work in progress may be recorded for the output of some service industries.
9. Treatment of cultivated natural growth as output.
10. The concept of real net national disposable income will be introduced.
11. Extension of the coverage of technical reserves of insurance schemes to non-life insurance and reserves for prepayments of premiums and claims.
12. Treatment of write-off of bad debts and expropriation of property without compensation as other changes in volume.

The changes in basic concepts in the SNA listed in table 4 constitute of changes that require additional statistical work, like reclassification or splitting up of items on the basis of present data sources. For example, the expenditure on computer software are already a separate heading in the surveys for the production statistics (see Bos, 1992b; Bos and Gorter, 1993; some figures can already be found in Vosselman, 1991). Expenditure on mineral exploration can probably also be derived rather easily from the annual reports used to estimate the figures on the relevant industries.

Table 5. Changes in basic concepts in the SNA that may be difficult to implement

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1. Licensing is now regarded as production. Payments for licenses are therefore payments for services. However, the purchase of patents is not to be recorded as fixed capital formation (this is an inconsistency in the new SNA).
2. Literary artistic work (writing books, composing music) is now regarded as production. Payments for literary artistic works are therefore payments for services and not property income.
3. The purchase of historical monuments should be recorded as capital formation.
4. The purchase of valuables (gold, jewellery, works of art) should be recorded as capital formation.
5. Capital consumption should also be calculated for expenditure on mineral exploration, computer soft are and military durables except offensive weapons.
6. Illegal activities should not be excluded as a matter of principle from the production boundary of the system.
7. Social insurance schemes will cover private funded schemes as well as social security and unfunded employee schemes.
8. Capital consumption should be calculated for infrastructural works (roads, dikes, etc.).

Much more effort will have to be put in implementing the other changes listed in table 5. In calculating capital consumption for the newly included items in capital formation, time series on these types of capital formation will have to be compiled (in order to apply the Perpetual Inventory Method). The information about licensing seems also to be rather scattered at present and information about literary artistic work and valuables seems to be nearly absent. Estimation of illegal activities, like drugs trafficking and prostitution is of course also troublesome.

The changes in the SNA listed in tables 3 and 4 will most probably be implemented during the next revision of the Dutch national accounts. To what extent the changes in table 5 can be fully implemented is at present unclear. This will depend on time and resources available and on the result of further investigations into the problems and costs of their implementation. In addition, there are a few features in the SNA which will not be introduced in the Netherlands, like separate columns for own-account producers in the use table, or the distinction of market producers in the government sector (in our view, a contradictio in terminis).

Fortunately, the number of drastic changes in basic concepts is very limited.[8] Therefore, despite all kinds of data problems, most of the

changes in basic concepts can readily be introduced in the next revision
of the Dutch national accounts. For re-calculating time series on the
basis of the new concepts, in some cases ratios of the revision years
will have to be used to extrapolate back in time.

4.3 Changes in scope and detail in the SNA

In this section, we do not classify the changes in the SNA according to
the effort necessary for their implementation. In general, changes in
scope require substantial effort and changes in detail demand less
effort. Instead, a distinction is made between:
- Completing the national accounting system (table 6);
- Adding more or other detail to the accounting system (table 7);
- Supplementary tables (table 8);
- Modules that will supplement the core system of accounts (table 9).

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8. This was also an explicit requirement of the revision of the SNA (see Harrison, 1990 and 1992).

Table 6. Changes in scope that aim at completing the national accounting system

1. Subsectoring of households
2. Six sub-sectors are suggested for the financial corporate sector.
3. For non-financial and financial enterprises a distinction should be made between public, private, domestic and foreign controlled enterprises.
4. Production account for sectors
5. Separate accounts will be introduced to show social transfers in kind and their impact on income and expenditure.
6. Other changes in assets accounts
7. Balance sheets
   7.1 The sector non-financial enterprises
   7.2 The sector government
   7.3 The sector financial enterprises
   7.4 The sector households (with consumer durables as a memorandum item)
8. Simultaneous classification by sectors and economic activities of value added categories and intermediate consumption.
9. Simultaneous classification by sectors and economic activities of capital formation.
10. A three-way table of financial transactions by creditor and debtor sector for each type of financial instrument will be introduced.

Table 7. Changes that amount to adding more detail to the accounting system of the 1968 SNA

1. Showing imputations and attributions as far as possible as separate items
2. Identification of new financial instruments: repurchase agreements, derivatives and secondary instruments, deep discounted bonds.
3. Distinction between repairs performed on investments goods imported/exported and on other goods imported/exported.
4. Separate identification of direct foreign investments.
5. Acquisitions and disposals of capital formation will be shown separately.

Table 8. New supplementary tables

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1. Social Accounting Matrix
   1.1 Pilot study   (see also Keuning, 1991)
   1.2 Full Implementation
2. International comparisons/the use of purchasing power parities
3. Supplementary tables that show the non-financial public sector and
   the non-monetary public sector.
4. Capital formation and capital stock by user (in addition to the tables
   in the core by owner)

Table 9. The implementation of modules in the Dutch national accounts.

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1. Environmental module
   1.1 Conceptual framework   (see De Boo, et al., 1991 and Keuning, 1992)
   1.2 Pilot study with figures on 1989   (see De Haan, et al., 1993)
   1.3 Full implementation
2. Time allocation module
   2.1 Conceptual framework with some figures   (see Kazemier and Exel, 1992)
   2.2 Full implementation
3. Research and Development module
   3.1 Conceptual framework   (see Bos, et al, 1992)
   3.2 Pilot study with figures on some years
   3.3 Full implementation
4. Human capital module
   4.1 Conceptual framework
   4.2 Pilot study with figures on some years
   4.3 Full implementation
5. Fiscal module
   5.1 Pilot study with figures on some years
   5.2 Full implementation

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5. Changes in the Dutch national accounts not related to the revised SNA

The revision of the SNA necessitates a revision of the Dutch national accounts (see section 4.1). A revision of the Dutch national accounts is also induced by the revision of the European activity classification NACE). It has been decided that the national accounts and other economic statistics of the CBS will employ these revised classifications in the near future. For the various statistics, a time schedule for its implementation has been agreed upon. For several years, some base statistics will be based on the old classification and others on the revised classification. The national accounts compilers have to solve the additional problem of reclassification of data from the basic statistics. Starting from the revision all national accounts data will be based on the revised activity classifications.

Two important changes in data sources will also affect the compilation of Dutch national accounts. This pertains to the new commodity classification for statistics on manufacturing, PRODCOM and to the change in the Foreign Trade Statistics due to Europe 1992.

The commodity classification PRODCOM is used for CBS statistics on manufacturing since 1993. For the purposes of the national accounts, PRODCOM data have to be transformed into data in terms of national accounts commodity groups. A problem is that in non-manufacturing surveys other commodity classifications are used and will be used. The same is true for final expenditures. Any change in the classification of commodities and services, that does not lead to a single classification for goods and services for all kind of transactions, poses an extra burden on the compilation of national accounts. This will complicate the possibility for our National account to comply with the international guidelines.

Another important change in data sources is the drastic change in the Foreign trade statistics. The customs data on intra-EC trade in merchandise have ceased to exist because of Europe 1992. Instead the Intrastat-system for recording intra-EC trade has been introduced (see Bos, 1992a,

pp. 7-17). The timeliness, reliability and detail of the data may be adversely affected by this change, in particular in the short term.

Both changes in data sources do not necessitate a revision in themselves, as these changes have to be tackled immediately by the national accounts compilers. In order to preserve the reliability and timeliness of national accounts figures, both changes will demand a lot of additional effort, in particular in the short term.

4. Conclusions

This paper discussed the implementation of the new guidelines by the United Nations on national accounting (SNA) in the Netherlands. The changes in basic concepts and classifications in the SNA will be implemented during a revision over 1995, scheduled for completion in 1998. The other changes will be introduced gradually. Important changes scheduled for the near feature are the incorporation of balance sheets, an environmental module and a Social Accounting Matrix.

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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.

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 of the UN System of National Accounts. The first is its 'size':
reviewing this issue, it can be concluded that the next SNA should con-
tain an integrated meso-economic statistical system. It is essential
that the next SNA contains an institutional system without the imputa-
tions and attributions that pollute the 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 avoi-
ding 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 indus-
tries. 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 impro-
vement is that during the entire statistical process, from the proces-
sing 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).
A set of macro-economic time series for the Netherlands 1921-1939 is
presented. The new series differ considerably from the data that had
been published before. They are also more comprehensive, more detailed,
and conceptually consistent with the modern National Accounts. The
macro-economic developments that are shown by the new series are dis-
cussed. It turns out that the traditional economic-historical view of
the Dutch economy has to be reversed.

**NA/19 Constant wealth national income: accounting for war damage with an ap-
plication 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, Adriaan M. (1989).
Units in legal-administrative reality are often not suitable as statistical units in describing economic processes. Some transformation of legal-administrative units into economic statistical units is needed. This paper examines this transformation and furnishes definitions of economic statistical units. Proper definitions are especially important because of the forthcoming revision of the SNA.

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, Oudde-ken, 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 Quar-terly 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, con-cepts 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. (1990).
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 supply and use tables and input-output tables, Bloem, Adriaan M., Sake De Boer and Pieter Wind (1993).
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 inter-national guidelines are examined. Net recording is in general to be preferred. An exception has to be made when processing amounts to a complete production process, e.g. oil refineries in the Netherlands.

NA/37 A proposal for a SAM which fits into the next System of National Accounts, Keuning, Steven J. (1990).
This paper shows that all flow accounts which may become part of the next System of National Accounts can be embedded easily in a Social Accounting Matrix (SAM). In fact, for many purposes a SAM format may be preferred to the traditional T-accounts for the institutional sectors, since it allows for more flexibility in selecting relevant classifica-tions and valuation principles.

NA/38 Net versus gross National Income, Bos, Frits (1990).
In practice, gross figures of Domestic Product, National Product and National Income are most often preferred to net figures. In this paper, this practice is challenged. Conceptual issues and the reliability of capital consumption estimates are discussed.

NA/39 Concealed interest income of households in the Netherlands; 1977, 1979 and 1981, Kazemier, Brugt (1990).
The major problem in estimating the size of hidden income is that total income, reported plus unreported, is unknown. However, this is not the case with total interest income of households in the Netherlands. This makes it possible to estimate at least the order of magnitude of this part of hidden income. In this paper it will be shown that in 1977, 1979 and 1981 almost 50% of total interest received by households was concealed.

NA/40 Who came off worst: Structural change of Dutch value added and employ- ment during the interwar period, Den Bakker, Gert P. and Jan de Gijt (1990).
In this paper new data for the interwar period are presented. The distribution of value added over industries and a break-down of value added into components is given. Employment by industry is estimated as well. Moreover, structural changes during the interwar years and in the more recent past are juxtaposed.

NA/41 The supply of hidden labour in the Netherlands: a model, Kazemier, Brugt and Rob van Eck (1990).
This paper presents a model of the supply of hidden labour in the Netherlands. Model simulations show that the supply of hidden labour is not very sensitive to cyclical fluctuations. A tax exempt of 1500 guilders for second jobs and a higher probability of detection, however, may substantially decrease the magnitude of the hidden labour market.

NA/42 Benefits from productivity growth and the distribution of income, Keuning, Steven J. (1990).
This paper contains a discussion on the measurement of multifactor productivity and sketches a framework for analyzing the relation between productivity changes and changes in the average factor remuneration rate by industry. Subsequently, the effects on the average wage rate by labour category and the household primary income distribution are studied.

NA/43 Valuation principles in supply and use tables and in the sectoral accounts, Keuning, Steven J. (1991).
In many instances, the valuation of transactions in goods and services in the national accounts poses a problem. The main reason is that the price paid by the purchaser deviates from the price received by the producers. The paper discusses these problems and demonstrates that different valuations should be used in the supply and use tables and in the sectoral accounts.

NA/44 The choice of index number formulae and weights in the National Accounts. A sensitivity analysis based on macro-economic data for the interwar period, Bakker, Gert P. den (1991).
The sensitivity of growth estimates to variations in index number formulae and weighting procedures is discussed. The calculations concern the macro-economic variables for the interwar period in the Netherlands. It appears, that the use of different formulae and weights yields large differences in growth rates. Comparisons of Gross Domestic Product growth rates among countries are presently obscured by the use of different deflation methods. There exists an urgent need for standardization of deflation methods at the international level.

NA/45 Volume measurement of government output in the Netherlands; some alternatives, Kazemier, Brugt (1991).
This paper discusses three alternative methods for the measurement of the production volume of government. All methods yield almost similar results: the average annual increase in the last two decades of government labour productivity is about 0.7 percent per full-time worker equivalent. The implementation of either one of these methods would have led to circa 0.1 percentage points higher estimates of economic growth in the Netherlands.

NA/46 An environmental module and the complete system of national accounts, Boo, Abram J. De, Peter R. Bosch, Cor N. Gorter and Steven J. Keuning (1991).
A linkage between environmental data and the National Accounts is often limited to the production accounts. This paper argues that the consequences of economic actions on ecosystems and vice versa should be considered in terms of the complete System of National Accounts (SNA). One should begin with relating volume flows of environmental matter to the standard economic accounts. For this purpose, a so-called National Accounting Matrix including Environmental Accounts (NAMEA) is proposed. This is illustrated with an example.

NA/47 Deregulation and economic statistics: Europe 1992, Bos, Frits (1992).
The consequences of deregulation for economic statistics are discussed with a view to Europe 1992. In particular, the effects of the introduction of the Intrastat-system for statistics on international trade are investigated. It is argued that if the Statistical Offices of the EC-countries do not respond adequately, Europe 1992 will lead to a deterioration of economic statistics: they will become less reliable, less cost effective and less balanced.

NA/48 The history of national accounting, Bos, Frits (1992).
At present, the national accounts in most countries are compiled on the basis of concepts and classifications recommended in the 1968-United Nations guidelines. In this paper, we trace the historical roots of these guidelines (e.g. the work by King, Petty, Kuznets, Keynes, Leontief, Frisch, Tinbergen and Stone), compare the subsequent guidelines and discuss also alternative accounting systems like extended accounts and SAMs.

NA/49 Quality assessment of macroeconomic figures: The Dutch Quarterly Flash, Reininga, Ted, Gerrit Zijlmans and Ron Janssen (1992).
Since 1989-IV, the Dutch Central Bureau of Statistics has made preliminary estimates of quarterly macroeconomic figures at about 8 weeks after the end of the reference quarter. Since 1991-II, a preliminary or "Flash" estimate of GDP has been published. The decision to do so was based on a study comparing the Flash estimates and the regular Quarterly Accounts figures, which have a 17-week delay. This paper reports on a similar study with figures through 1991-III.

NA/50 Quality improvement of the Dutch Quarterly Flash: A Time Series Analysis of some Service Industries, Reininga, Ted and Gerrit Zijlmans (1992).
The Dutch Quarterly Flash (QF) is, just like the regular Quarterly Accounts (QA), a fully integrated statistic based on a quarterly updated input-output table. Not all short term statistics used to update the QA's IO-table are timely enough to be of use for the QF, so other sources have to be found or forecasts have to be made. In large parts of the service industry the latter is the only possibility. This paper reports on the use of econometric techniques (viz. series decomposition and ARIMA modelling) to improve the quality of the forecasts in five parts of the service industry.

NA/51 A Research and Development Module supplementing the National Accounts, Bos, Frits, Hugo Hollanders and Steven Keuning (1992).
This paper presents a national accounts framework fully tailored to a description of the role of Research and Development (R&D) in the national economy. The framework facilitates to draw macro-economic conclusions from all kinds of data on R&D (also micro-data and qualitative information). Figures presented in this way can serve as a data base for modelling the role of R&D in the national economy.

NA/52 The allocation of time in the Netherlands in the context of the SNA; a module, Kazemier, Brugt and Jeanet Exel (1992).
This paper presents a module on informal production, supplementing the National Accounts. Its purpose is to incorporate informal production into the concepts of the SNA. The relation between formal and informal production is shown in the framework of a Social Accounting Matrix (SAM). To avoid a controversial valuation of informal production, the module constists of two SAMs. One expressed in actual prices with informal labour valued zero, and one which expresses the embedded informal labour input measured in terms of hours worked.

NA/53 National Accounts and the environment: the case for a system's approach, Keuning, Steven J. (1992).
The present set of main economic indicators should be extended with one or a few indicators on the state of the environment. This paper lists various reasons why a so-called Green Domestic Product is not suitable for this purpose. Instead, a system's approach should be followed. A National Accounting Matrix including Environmental Accounts (NAMEA) is presented and the way to derive one or more separate indicators on the environment from this information system is outlined.

NA/54 How to treat multi-regional units and the extra-territorial region in the Regional Accounts?, De Vet, Bas (1992).

This paper discusses the regionalization of production and capital formation by multi-regional kind-of-activity units. It also examines the circumstances in which a unit may be said to have a local kind-of-activity unit in the extra-territorial region and what should be attributed to this "region".

NA/55 A historical Social Accounting Matrix for the Netherlands (1938), Den Bakker, Gert P., Jan de Gijt and Steven J. Keuning (1992).

This paper presents a Social Accounting Matrix (SAM) for the Netherlands in 1938, including related, non-monetary tables on demographic characteristics, employment, etc. The distribution of income and expenditure among household subgroups in the 1938 SAM is compared with concomittant data for 1987.

NA/56 Origin and development of the Dutch National Accounts, Den Bakker, Gert P. (1992).

This paper describes the history of national accounting in the Netherlands. After two early estimates in the beginning of the nineteenth century, modern national accounting started in the 1930s on behalf of the Tinbergen model for the Dutch economy. The development spurred up after World War II to provide data to the government for economic planning purposes. In the 1980s, the development was towards a flexible and institutional approach.

NA/57 Compiling Dutch Gross National Product (GNP); summary report on the final estimates after the revision in 1992, Bos, Frits (1992).

This summary report describes the sources and methods used for compiling the final estimate of Dutch Gross National Product after the revision of the Dutch National Accounts in 1992. Attention is focused on the estimation procedures for 1988. A more extensive report is also available.

NA/58 Major changes and results of the revision of the Dutch National Accounts in 1992, Department of National Accounts (1992, forthcoming).

The revision in 1992 has improved the Dutch National Accounts in three ways. First, new and other data sources have been used, like Production statistics of service industries, the Budget Survey and Statistics on fixed capital formation. Secondly, the integration process has been improved by the use of detailed make- and use-tables instead of more aggregate input-output tables. Thirdly, several changes in bookkeeping conventions have been introduced, like a net instead of a gross registration of processing to order.

NA/59 A National Accounting Matrix for the Netherlands, Keuning, Steven and Jan de Gijt (1992).

Currently, the national accounts typically use two formats for presentation: matrices for the Input-Output tables and T-accounts for the transactions of institutional sectors. This paper demonstrates that presently available national accounts can easily be transformed into a National Accounting Matrix (NAM). This may improve both the transparency and analytic usefulness of the complete set of accounts.

NA/60 Integrated indicators in a National Accounting Matrix including environmental accounts (NAMEA); an application to the Netherlands, De Haan, Mark, Steven Keuning and Peter Bosch (1993).

In this paper, environmental indicators are integrated into a National Accounting Matrix including Environmental Accounts (NAMEA) and are put on a par with the major aggregates in the national accounts, like National Income. The environmental indicators reflect the goals of the environmental policy of the Dutch government. Concrete figures are presented for 1989. The NAMEA is optimally suited as a data base for modelling the interaction between the national economy and the environment.

NA/61 **Standard national accounting concepts, economic theory and data compilation issues; on constancy and change in the United Nations-Manuals on national accounting (1947, 1953, 1968 and 1993)**, Bos, Frits (1993).
In this paper, the four successive guidelines of the United Nations on national accounting are discussed in view of economic theory (Keynesian analysis, welfare, Hicksian income, input-output analysis, etc.) and data compilation issues (e.g. the link with concepts in administrative data sources). The new guidelines of the EC should complement those of the UN and be simpler and more cost-efficient. It should define a balanced set of operational concepts and tables that is attainable for most EC countries within 5 years.

NA/62 **Revision of the 1987-1992 Dutch agricultural accounts,** Pauli, Peter and Nico van Stokrom (1993, forthcoming).
During the recent revision of the Dutch national accounts, new agricultural accounts have been compiled for the Netherlands. This paper presents the major methodological and practical improvements and results for 1987, the base year for this revision. In addition, this paper demonstrates that a linkage can be established between the E.C. agricultural accounting system and the agricultural part of the standard national accounts.

NA/63 **Implementing the revised SNA in the Dutch National Accounts,** Bos, Frits (1993).
This paper discusses the implementation of the new United Nations guidelines on national accounting (SNA) in the Netherlands. The changes in basic concepts and classifications in the SNA will be implemented during the forthcoming revision. The changes in scope will be introduced gradually. Important changes scheduled for the near future are the incorporation of balance sheets, an environmental module and a Social Accounting Matrix.

NA/64 **Damage and insurance compensations in the SNA, the business accounts and the Dutch national accounts,** Baris, Willem (1993, forthcoming).
This paper describes the recording of damages to inventories and produced fixed assets in general, including damages as a result of legal product liability and of the liability for damage to the environment. In this regard, the 1993 System of National Accounts and the practice of business accounting are compared with the Dutch national accounts.

NA/65 **An analysis of economic growth: a description of the basic data available for the Netherlands and an application,** Van der Hoeven, Hendrie, George van Leeuwen and Gerrit Zijlmans (1993, forthcoming).
This paper describes the STAN project of the OECD and the Dutch national accounts data supplied to the STAN database, which is designed for a structural analysis of the role of technology in economic performance. Following an OECD analysis for other industrial countries, the importance of international trade for a small open economy such as the Netherlands is investigated.

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