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A SOCIAL ACCOUNTING MATRIX FOR THE NETHERLANDS

concepts and results *)

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A SOCIAL ACCOUNTING MATRIX FOR THE NETHERLANDS, CONCEPTS AND RESULTS

Abstract

This paper reports on the pilot-compilation of a Social Accounting Matrix for the Netherlands. A SAM framework has several advantages compared to the input-output table and the so-called T-accounts. For example, in a SAM, the most relevant unit and classification of units for each account can be chosen. This flexibility makes the SAM very suitable to link for example monetary data and non-monetary data (labour, environment, etc.) within one overall framework.

Within this SAM for the Netherlands, the Labour accounts and the Socio-economic accounts are linked with national accounts figures. Consequently, an extended set of economic data together with socio-economic data on types of labour, the distribution of income among household groups and their different consumption behaviour can be obtained from one fully consistent data system. The importance of such an extended framework has been underlined by various important users.

Some main features of this SAM are the subdivision of the primary input category labour into fourteen types of labour classified by sex and education level, and the subdivision of the sector households into fourteen groups of households classified by source of income, household composition and economic activity.

In this paper, first the SAM-framework and the criteria for the classifications used in the various accounts are elaborated. Subsequently, the results for 1990 as well as the changes between 1988 and 1990 are discussed extensively.

Contents

1. Introduction

Recently, the revision of the United Nations' System of National Accounts (1993 SNA) has been completed (United Nations et al, 1993). In the discussions that preceded this revision, a number of Dutch national accountants have proposed to introduce greater flexibility in the SNA. Furthermore, it was recognized that the 1968 system of national accounts did not sufficiently take account of social concerns such as (un)employment and income inequality. This has led to the incorporation of a chapter on Social Accounting Matrices in the 1993 SNA.

In general, one can state that a SAM is an enlarged presentation of the system of national accounts in matrix terms. A SAM embodies the information thus far included in the national accounts and adds more detailed socio-economic data. Collected statistics on the labour market and on household groups are integrated into national accounts data in one general framework by the adoption of commonly shared units, definitions and classifications.

Compiling a SAM has several advantages. First, SAMs link data on socio-economic concerns like unemployment and the income distribution with traditional macro-economic indicators like Gross Domestic Product (GDP), Net National Income (NNI), annual inflation and the external current account balance. This linkage is at the very heart of a SAM. On the basis of a detailed SAM, interactions between the economic structure and the distribution of receipts and outlays can be analyzed in models of varying degrees of complexity.

Secondly, a SAM is a matrix-framework in which both supply and use tables and institutional sector accounts are integrated in a single table. An aggregate SAM therefore provides a bird's eye view of the economy as a whole. Subsequently, detailed tables elaborating specific parts of the system can easily be linked to the macro-SAM. Furthermore, it is possible to apply matrix algebra both in the compilation phase and in subsequent economic analyses.

A third and very important advantage is that a SAM applies 'multiple actoring and multiple sectoring'. For each account (goods and services account, production account, generation of income account, distribution of income account, etcetera), the most appropriate unit and classification of units can be chosen. This option also facilitates the linkage of non-monetary data to the monetary figures from the system of national accounts. Examples in this respect are (un)employment, environmental pollution, unpaid household labour input, etcetera.[1)]

Fourthly, a SAM is more succinct than other methods of presenting the complete system of national accounts. Each (single) entry shows both the paying and receiving unit of a transaction. For example, final consumption expenditure is registered as a receipt in the goods and services account, and simultaneously as an outlay in the use of disposable income account; see table 1.

Finally, a SAM enhances the reliability of statistical data by combining data from a great variety of sources at a low level of aggregation. To a larger extent than in the conventional national accounts, the best possible use is made of available statistics.

For all these reasons, important users of Statistics Netherlands (CBS) have underlined the importance of an extended framework like the SAM (e.g. Zalm, 1994). Therefore, in 1993 CBS started a research project on the compilation of two comparable SAMs for the Netherlands. As a starting-point, 1988 and 1990 have been chosen as reference years.

At the CBS, several partially integrated frameworks are available. Important examples are the Labour Accounts (LA), the Socio-Economic Accounts (SEA) and the Socio-Demographic Accounts (SDA). It is possible to link a number of these frameworks and the system of national accounts within a SAM-framework.[2)] In the first pilot-compilation of a SAM for the

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1. See for example Kazemier and Exel, 1992 and De Haan et al., 1993 for linkages of non-monetary data on household labour input and on the environment, respectively.
2. Another framework at the CBS which links data on national accounts with other (disaggregated) statistics is the system of Total accounts. See Zeelenberg et al.,1989.

Netherlands, it has been decided to integrate only the LA and the SEA into the national accounts.

The LA provide an overall picture of the Dutch labour market; as such they contain extensive information about employment and compensation of employees, broken down not only by industry but also by sex, level of education, part-time/full-time jobs, etcetera. The SEA on the other hand contain extensive information on the income distribution and consumption patterns of various household groups. Linking these data with the data from the system of national accounts thus significantly enlarges the scope of national accounts.

This paper reports on the pilot-compilation of a SAM for the Netherlands. As the SAM-format is less familiar than for example the input-output table and the so-called T-accounts, section 2 contains a general introduction on the structure of the SAM.

One of the most fundamental issues in the compilation of a SAM is the choice of units and the subsequent classification of units. This is the subject of section 3.

Section 4 subsequently elaborates the information on the labour market and on the distribution and use of income among household groups which can be derived from this pilot-SAM for the Netherlands. In this section, some of the results for the year 1990 as well as the changes between 1988 and 1990 are analyzed.

Finally, the main conclusions of the pilot-compilation of a SAM for the Netherlands are drawn in section 5.

In addition, this paper contains several annexes. Annex 1 starts with a discussion of the available sources of information (LA and SEA). Subsequently, annex 2 deals with some conceptual issues concerning the linkage between the national accounts and the SEA. An extended list of all classifications used in the accounts of the SAM is added in annexes 3 and 4. The detailed results of the SAMs for 1988 and 1990 are presented

in separate tables (spreadsheets) which are (only) available on floppy disks. The contents and the directions for the use of these floppy disks are described in annex 5 of this paper.

2. Consolidated SAMs for the Netherlands

In this section, the structure of a SAM is first explained by means of a consolidated matrix[3]. An overall picture of this matrix containing figures for the years 1988 and 1990 is shown in tables 1 and 2, respectively; in addition, table 3 shows the average annual growth rates between 1988 and 1990.

In the SAM, each account is represented by a row and column pair. For example, row and column 1 contain the goods and services account, row and column 2 the production account, etcetera. The receipts (or resources) are shown in the row, the outlays (or uses) in the column. Most accounts are closed with a meaningful balancing item, which typically re-appears on the next account. For example, the balancing item of the production account, gross domestic product (GDP) at factor cost, is recorded in the row of the next account, the generation of income account. As a consequence, the totals of row and column are equal by definition. All boxes containing a balancing item have been doubly framed.

A SAM in aggregated form as presented in tables 1 up to 3 can serve as a bird's eye view of an economy as a whole (Keuning, 1994a). The interrelationships between the main transaction categories and the set of domestic and national balancing items are shown on just one page. In the detailed matrices, each account is subclassified according to the most relevant groups of economic actors. The principles governing the classifications are mentioned in the headings of each account; the classifications actually used in the detailed SAM are the subject of the next section. Below, each account of the (consolidated) SAM is discussed briefly.

The first row and column show the **goods and services account**. In the row, the use of goods and services, valued at purchasers' prices, is

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3. For a more extensive introduction to matrix presentations, see e.g. CBS (1993) and Keuning and De Gijt (1992).

registered: intermediate consumption (cell 1,2), final consumption expenditure (cell 1,6), changes in inventories (cell 1,8), gross fixed capital formation (cell 1,10) and exports (cell 1,14).

Column 1 shows the total supply of goods and services. The goods and services are produced by resident industries (cell 2,1) or imported (cell 14,1). The product-related taxes and subsidies are registered in a separate tax account (cell 13,1). The trade and transport margins charged on the produced and imported goods are also shown separately (cell 1,1). The elements in the column add up to the total supply of the goods and services at purchasers' prices.

The second account is the **production account**. The row shows the output of the resident industries at basic prices (cell 2,1). The column shows the costs of production by industry: intermediate consumption (cell 1,2) and other (i.e. not product-related) taxes less subsidies on production, registered in the tax account (cell 13,2). The balancing item of this account in cell (3,2) corresponds with GDP at factor cost.

The third row and column show the **generation of income account**. The receipts of the primary input categories (labour and capital) are presented in the row of this account: a) compensation of employees and gross operating surplus/mixed income as a result of domestic production activities (cell 3,2), b) the VAT invoiced by the seller, but not paid to the government (cell 3,13), and c) wages and salaries from the rest of the world (cell 3,14).

In the column, these receipts from the direct participation in production are assigned to several accounts: the consumption of fixed capital to the capital account (row 7), wages and salaries earned by foreigners to the current account of the rest of the world (row 14) and the balancing item, Net National Generated Income (NNGI), to the distribution of primary income account (row 4).

The fourth row and column record the **distribution of primary income** among institutional sectors. In the row, the sectors receive NNGI from

the generation of income account (cell 4,3) and property income from resident sectors (cell 4,4) as well as from the rest of the world (cell 4,14). The government sector receives the total of taxes less subsidies on production in this account (cell 4,13).

In column 4, property income to resident sectors (cell 4,4) and to the rest of the world (cell 14,4) is registered. The balancing item in account 4, total primary income received by resident sectors, corresponds with Net National Income (NNI) at market prices (cell 5,4).

In the row of the **distribution of secondary income account** (account 5), the sectors receive NNI (cell 5,4), current transfers from resident sectors (cell 5,5) and from the rest of the world (cell 5,14); taxes on income, wealth, etc. and social contributions received by the government are registered in the tax account (cell 5,13).

Column 5 records current transfers to resident sectors (cell 5,5) and to the rest of the world (cell 5,14) as well as taxes on income, wealth, etc. and social contributions paid by resident sectors (cell 5,13). This yields the balancing item Net National Disposable Income (cell 6,5).

Row and column 6 describe the **use of disposable income** by institutional sectors. The disposable income resulting from the distribution of secondary income account is used for final consumption expenditure (cell 1,6); the balancing item is Net National Saving (cell 7,6).

Row and column 7 contain the **capital account**. The receipts by institutional sector are recorded in the row: consumption of fixed capital (cell 7,3), net saving (cell 7,6) and capital transfers from resident sectors (cell 7,7) as well as from the rest of the world (cell 7,15). The outlays are recorded in the column: capital transfers to resident sectors (cell 7,7) and to the rest of the world (cell 15,7), gross capital formation (cell 8,7) and the balancing item Net Lending of the Total Economy (cell 11,7).

Account 8 is a dummy account. The reason for the insertion of this account is lack of information on the cross-classification of gross fixed capital formation by institutional sector and industry. On the row of account 8, gross capital formation per institutional sector resulting from the capital account is recorded. In the column, the following items are registered: changes in inventories specified by type of commodity (cell 1,8), gross fixed capital formation from production and imports specified by industry of destination (cell 9,8) and sales of used capital goods specified by type of asset (cell 10,8).

In the column of account 9, the investments in new capital goods per industry are cross-classified by type of asset (cell 10,9). In the column of account 10, these investments (minus sales of second-hand capital goods to consumers and to abroad) per type of asset are specified by product group (cell 1,10). VAT on land and other levies on fixed capital goods are registered on the tax account (cell 13,10).

Row and column 11 provide information on the **financial transactions** of the resident sectors. Besides the balancing item of the capital account, Net Lending of the Total Economy, the changes in liabilities are recorded in the row (cell 11,12). Together, these items yield the total sum available to residents for the acquisition of financial assets; see cell (12,11). Both the incurrence of liabilities and the acquisition of financial assets are specified by type of financial asset.

In addition to the changes in financial assets and liabilities of resident sectors, account 12 shows the acquisition of financial assets and the incurrence of liabilities by the rest of the world; see cells (12,15) and (15,12), respectively.

The next row and column contain the **tax account**. In the row of this account, the relationship between each tax and the transaction on which the tax is levied is shown: taxes less subsidies on products in the goods and services account (cell 13,1), other (not product-related) taxes less subsidies on production in the production account (cell 13,2), taxes and social contributions levied on the income and wealth of resident sectors

in the distribution of secondary income account (cell 13,5), levies on fixed capital goods in account 10 (cell 13,10) and finally, taxes levied on foreign income and wealth in the current account of the rest of the world (cell 13,14). In the column, the receipts of taxes and social contributions are specified in cells (3,13), (4,13), (5,13) and (14,13).

The **current account for the rest of the world** is shown in row and column 14. The row contains the payments to the rest of the world, that is the incomings of the rest of the world; in the column, the receipts from the rest of the world (i.e. the outgoings of the rest of the world) are recorded. The balancing item, the current external balance, is registered from the Dutch point of view. Therefore, this balancing item is presented in the row and not in the column of account 14. A positive amount means a surplus for the Netherlands, a negative amount a deficit for the Netherlands.

The last row and column represent the **capital account for the rest of the world**. The row records the capital transfers to the rest of the world (cell 15,7) and the incurrence of liabilities by the rest of the world vis-a-vis the Netherlands (cell 15,12). The column records, in addition to the balancing item of account 14, the capital transfers from the rest of the world (cell 7,15) and the acquisition of financial assets by the rest of the world (cell 12,15).

3. The classifications in the SAM.

Defining classifications for the various accounts is a vital phase in the construction of a SAM (Keuning, 1994a). In a SAM, it is possible to distinguish the most relevant unit and classification of units for each account. Because of this, the SAM is a very flexible framework. It makes the SAM a suitable instrument for integrating and presenting information from the Labour Accounts (LA) and the Socio-Economic Accounts (SEA) within the system of national accounts.

In general, the classifications should meet certain requirements[4]:

- groups should be homogeneous with regards to the main decisions they have to make and should be relatively stable over time;
- classifications should be a reflection of the variety in society, and
- classifications should be derivable from existing data sources.

Next, the classifications in the SAM for the Netherlands are reviewed in turn. A complete listing of all classifications can be found in annex 3.

1. Product groups

Account 1 describes the supply and use of goods and services. In a SAM, special attention is given to the presentation of different consumption patterns for various household groups; this information is presented in submatrix (1,6). Therefore, the subdivision of goods and services into product groups should contain the most relevant details about the consumption expenditure on goods and services by households.

In addition, the output structure of product groups by domestic industries should be taken into account. A shift in demand or an alternative way of production possibly affects the demand for factors of production and also the distribution of income among household groups.

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4. More information on general requirements can be found in e.g. Keuning and De Ruijter (1988).

An important criterion for the classification of goods and services in this SAM was the availability of data from the SEA about the consumption of various household groups. The SEA provide data on 31 quite homogeneous product groups. In addition, some products which are not consumed (by definition) have been added: e.g. trams and trains, construction, wage-services and processing. Finally, 51 product groups have been selected; see annex 3.

2. Industries

In the production account, the data have mainly been derived from the supply and use tables as compiled within the system of national accounts. The same is true for the totals of primary input categories labour and capital per industry. Data on the input of different types of labour in domestic production, however, are not available in the system of national accounts; here, use has been made of the LA.

The LA provide data on the input of different types of labour subdivided into 81 industries, whereas the system of national accounts contains total labour input figures for 58 industries. However, these classifications do not exactly correspond. Because of this, the classification applied in the pilot-SAM contains 41 industries, that is, the most detailed intersection of the two classifications.

In account 9, the classification by type of industry is a slight aggregate of the classification used in the production account. Due to lack of information, only 34 industries could be distinguished.

3. Primary input categories

Traditionally, in the generation of income account (account 3) two main primary input categories are distinguished:

- compensation of employees, broken down into wages and salaries and employers' social contributions, and
- gross operating surplus/mixed income.

The SAM contains additional information about the use and the remuneration of labour inputs. In submatrices (3,2) and (3,14), wages and salaries and the underlying number of employees have been broken by type of person employed. The same subclassification by type of labour is also used for the household groups that supply the labour. This supply is shown in submatrices (4,3) and (14,3).

In the pilot-SAM, labour input is disaggregated into 14 types of labour. The necessary information is derived from the LA. Two important determinants for employment and wages have been applied as discriminating criteria: sex and level of education attained. Regarding the level of education, the following seven categories are distinguished:
- basic education;
- lower general secondary education (MAVO);
- higher general secondary education (HAVO/VWO);
- lower vocational education;
- middle vocational education;
- higher vocational education and
- university training.

4. Institutional sectors

In the first instance, seven institutional sectors have been distinguished in accounts 4 and 5, identical to the ones used in the institutional sector accounts of the national accounts[5]:
- non-financial (corporate and quasi-corporate) enterprises;
- credit institutions;
- insurance companies and pension funds;
- central government;
- local government;
- social security funds and
- households.

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5. See CBS (1994a), part III, p. 198-227.

In account 6, the sectors constituting general government, that is central government, local government and social security funds, have been grouped together. The reason for this is lack of information on the consumption expenditure of these sectors by product group.

Furthermore, accounts 4, 5 and 6 contain a more detailed household classification. The sector households has been disaggregated into 14 socio-economic groups.

The subsectoring of households is based on the SEA. This framework applies a classification of household groups based on differences in consumption behaviour and sources of income. In the SAM, the following criteria are used: household category, household composition and main source of income.

First, the sector households has been subdivided into private households and institutional households. Private and institutional households are defined as sets of one or more persons, occupying one living accommodation and having the disposal of a private, or alternatively a joint provision of domestic services at that place, i.e. a provision of food and other essentials for living. Examples of institutional households are (persons in) prisons, homes for the elderly, etcetera.

Secondly, private households have been subdivided on the basis of their main source of income:
- wages and salaries;
- property income and mixed income, that is income from an unincorporated enterprise;
- transfer income in connection with old age and
- other transfer income, e.g. social benefits in connection with unemployment, invalidity and general neediness.

Thirdly, with the exception of the household groups with mixed income (and property income), these groups have been further broken down on the basis of the composition of the household:

- one person;
- two or more persons without children and
- two or more persons with children.

Fourthly, the household groups with mixed income as their main source of income have been split up according to the economic activity in which they are engaged:
- mixed income from agriculture;
- mixed income from trade, hotels, restaurants, cafes and repair services;
- mixed income from business and personal services, and
- mixed income from other activities and property income.

A last remark concerning the sector households relates to the contents of this sector in the system of national accounts. In the present system, the sector households not only includes private and institutional households but also non-profit institutions serving households such as sporting clubs and trade unions. In the SAM, these institutions are part of 'households undivided'; see annex 2.

Accounts 7 and 11 distinguish only seven institutional sectors; here, the sector households is not subdivided.

5. Investment categories

Account 8, the dummy account, has been classified by category of investment: fixed capital formation, changes in inventories and acquisitions less disposals of land. The last item has been registered net; therefore, it only appears in the row of the account.

6. Types of fixed assets

Account 10 has been classified by type of fixed asset: dwellings and non-residential buildings, civil engineering works, external transport equipment, increase in livestock, machinery and other equipment and finally, transfer costs. These types have been cross-classified with the

industries in the row and with the underlying product groups in the column of account 10.

7. Types of financial assets

The classification by type of financial assets is the same as used in the institutional sector accounts of the system of national accounts (CBS, 1994a). In this subdivision, two criteria have been combined as much as possible:

- the nature and the form of the financial transaction, i.e. currency, deposits, bonds, shares, loans, etcetera. As a result, important parts of the money and capital market are described.
- the term and the transferability of the financial transaction. Doing so, an overview of the changes in the liquidity and the solvability of each sector can be obtained.

8. Categories of taxes and subsidies

There are various types of taxes, social contributions and subsidies in the Netherlands. They are charged on various types of transactions: transactions in goods and services, transaction in relation to production activities, income transactions, etcetera. To show this relationship explicitly, a tax account has been introduced in this SAM. By doing so, it is possible to examine more closely the effects of government policy on e.g. the distribution of income among various household groups.

A subdivision of taxes and subsidies into different categories can be based on the following two criteria: the purpose and the base on which it is levied. The OECD holds the view that generally the classification of taxes should be governed by the base on which they are levied. Regarding social contributions, however, the OECD makes an exception to this rule; the classification of this item is based on the purpose of the 'tax', i.e. the right to receive social benefits. In this SAM, the general principles of the OECD have been applied. As a consequence, the taxes, social contributions and subsidies have been subdivided into the following broad categories:

- VAT;
- excises;
- taxes on imports (excluding VAT);
- other taxes on production;
- subsidies;
- taxes on income;
- taxes on wealth, etc. (e.g. tax on net wealth of individuals, real estate tax and motor vehicle tax paid by households);
- general social insurance premiums;
- employees social insurance premiums;
- imputed social contributions and
- pension premiums.

In addition, a separate category has been distinguished for environmental taxes. Environmental policies play an increasing role in economic decision-making (see De Haan et al., 1993). In accordance with the general rule of the OECD for classifying taxes, a new base has been introduced as a criterion on which taxes are defined: the direct pollution of the environment. Taxes which have been classified as environmental taxes are:

- energy levies (WABM);
- refuse collection rate;
- sewerage duties;
- levies on water pollution;
- levy on manure surplus;
- levy on noise pollution of civil aviation and
- levy on ground water.

4. More detailed description of the income accounts

Accounts 3 up to 6 record the generation, distribution, redistribution and use of income. Together, the transactions in these accounts constitute the major parts of the circular flow of income (see e.g. Keuning, 1994a). In fact, they constitute the core of the SAM. First, the generation of income account (account 3) shows which primary input category receives generated income from which industry, and how this income is allocated to the institutional sectors. Secondly, the accounts for primary and secondary distribution of income (account 4 and 5) record which sector pays the various components of income (interest, dividends, taxes, etcetera) to which other sector[6]. Finally, in the use of disposable income account (account 6) final consumption expenditure is recorded for each institutional sector.

In this section, the contents of the submatrices of account 3 up to 6 are discussed more extensively. In addition, the results of the pilot-compilation of the SAM for 1990 and some data on average growth rates between 1988 and 1990 are presented and analyzed.

4.1 Generation of income by primary input category

In tracing the circular flow of income, it is essential to know how income is generated in the first place. Submatrix (3,2) shows this generation of income for the various factors of production; see table 4[7]. The remuneration of the production factor labour, i.e. compensation of employees, consists of 1) wages and salaries and 2) employers' social contributions. For each industry, the wages and salaries have been subdivided into the distinguished types of employed person and recorded

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6. To get a better view of the circular flow of income, some submatrices in this pilot-SAM have not only been classified by the paying and receiving sector but also by type of transaction. This means that in fact the matrix-framework has been extended to a third dimension.
7. For the purpose of easy presentation, the 41 industries distinguished in the most detailed submatrix have been aggregated; for the linkage between both classifications, see annex 4.

in row 3.1a up to 3.1n[8]. The employers' social contributions have been recorded in row 3.2. The intention was to record consumption of fixed capital and net operating surplus/mixed income separately. However, thus far it was not possible to subdivide the consumption of fixed capital in accordance with the detailed classification of industries used in account 2 of the SAM. Therefore, only gross operating surplus/mixed income has been recorded in submatrix (3,2).

In addition to data on the remuneration of employees, also data on the number of employees per industry have been compiled; see table 6.a. On the basis of the Labour Accounts (LA), the same classification by sex and level of education could be applied. The data on paid employment are measured in full-time equivalents; so, part-time jobs have been converted into full-time equivalents. In addition to employees, data were also available on the labour inputs of self-employed persons, cross-classified by type of employed person; see table 6.b. Total employment, that is employees plus self-employed, is presented in table 6.c.

Total primary income generated by unincorporated enterprises is called 'mixed income'. This income includes not only the capital income of unincorporated enterprises; it also contains a remuneration for the labour inputs of the employer and possibly unpaid family workers. From the information on self-employed persons in combination with the average compensation of employees per type of employed person in each industry, one might impute an estimate for the labour income of self-employed persons. Thus far, this has not been done. Therefore, this income is still part of the item 'Operating surplus/mixed income (net)' in row 3.4 of submatrix (3,2); see table 4.

Taking a closer look at table 4, one can see that in 1990 49.2%[9] of

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8. Code-numbers like 3.1a or, for example, 3.2 refer to the distinguished category in account 3. For the description of the code-numbers: see annex 3. In some cases, the term '**row** 3.1a' is used. With this, the row of a particular submatrix is indicated, in this case the row of category 3.1a in submatrix (3.2).
9. Because of the rounding of the data, the figures on shares, growth rates and wage rates should be interpreted with care. They suggest more precision than they actually have.

GDP accrued to wages and salaries and 42.6% to operating surplus/mixed income. In agriculture, forestry and fishing, most of gross value added consisted of operating surplus/mixed income: 83.5%. This is caused by the high proportion of self-employed (i.e. farmers) in this industry. Another industry where operating surplus accounted for the lion's share (93.8%) of value added was mining and quarrying. Of course, this is a consequence of the capital-intensive character of mining and quarrying. In general government services and education, on the other hand, 92.4% (74.9% + 17.5%) of value added accrued to the employees. The net operating surplus of the government sector is zero by definition; consequently, value added mainly consists of labour costs.

Table 4 also gives the distribution of wages and salaries among categories of labour by industry in the year 1990. In this table, four aggregate categories of employed persons are distinguished: male and female, in combination with low and high education. Here, middle and higher vocational education as well as university training have been considered as high education; the other educational levels have been included in low education. On average, 75.9% of total wages accrued to male and 24.1% to female employees. However, there were large differences between industries. In non-commercial services the share of high educated women in wages and salaries was more than 47%, contrasting with construction for example, where the share of female workers in wages and salaries was negligible.

Table 5 shows the average annual growth rates of (components of) nominal value added between 1988 and 1990. Mainly because of large increases in the prices of natural gas and oil, mining and quarrying as well as the petroleum industry had the highest growth rates. These terms-of-trade gains were fully absorbed by the profits, as the growth rate of wages and salaries was in fact the lowest in these industries. In commercial services, the growth rate of value added was almost 10%. This industry also accounted for an important share in total value added (20.0%) in 1990. Furthermore, apart from the petroleum industry, the highest growth rates of both wages and salaries (12.5%) and operating surplus/mixed income (11.9%) was in commercial services.

The figures concerning wages and salaries and employers' social contributions in table 5 deserve further attention. The revision of the tax legislation ("Operatie Oort") in 1990 caused major changes in the collection of taxes and premiums between 1988 and 1990. Among other things, the outcome of this revision was that social insurance premiums were not chargeable to employers any longer. From 1990 onwards, all premiums had to be paid by employees. In connection with this, employers were obliged to pay an extra transfer allowance which, as a result, raised the wages and salaries with about the same amount as the employers' social contributions were reduced.

Table 6 shows the distribution of labour inputs among Dutch industries in 1990. In table 6.a, one can see that the average share of women in paid employment (in full-time equivalents) was 31.3% and that of men 68.7%. Particularly in non-commercial services, the share of high educated female workers was very high: 50.9%. Furthermore, low educated female employees accounted for the highest share in commercial services: almost 22%. In mining and quarrying, the share of men with high education was approximately 60%; however, the share of this industry in total paid employment of Dutch industries was just 0.2%. In manufacturing, the share of male workers was 83.4%, while at the same time this industry was the most important employer (19.9% of total paid employment in the Netherlands). In general, the distribution of the four categories of workers among industries differed much.

For all industries together, self-employed persons accounted for 11.9% of total employment in 1990. Not surprisingly, agriculture, forestry and fishing (70.1%) and trade, hotels, restaurants, cafes and repair services (21.4%) had the highest shares. From table 6.b, one can derive that the share of men in self-employed persons is 76.4%. This is almost 8 percentage-points higher than their share in paid employment. The difference is mainly caused by a higher share of males with high education. On the other hand, the share of women with high education is almost 6 percentage-points lower.

Table 7 shows the annual growth rates of employment between 1988 and 1990. On average, the growth rate of total employment was 2.1%. For employees and self-employed, this figure differed much: 2.4% for paid employment and only 0.4% for self-employment.

There were major differences between industries and types of employed persons. Especially trade, hotels, restaurants, cafes and repair services as well as (other) commercial services accounted for relatively high growth rates: 3.8% and 5.0%, respectively. On the other hand, public utilities and general government services and education had negative growth rates: -1.1% and -0.4%. Regarding types of employed persons, female employees accounted for a growth rate of 4.6%; the growth of male employment was considerably lower: 1.4%. The differences between employees with low and high education were even more dramatic. Female employees with high education accounted for the highest growth rate: 8.1% (male: 3.0%), while low educated male employees accounted for a negative growth rate: -0.8% (female: 0.3%). This pattern of growth rates by type of employed persons could by and large be observed in all industries. However, industries with relatively high growth rates of total employment also accounted for the largest shifts in the shares of female employees between 1988 and 1990: trade, hotels, restaurants, cafes and repair services (+1.3 percentage-points), transport, storage and communication (+1.5) and commercial services (+1.7). Only in construction the share of female employees decreased from 5.0% to 4.4%. The shifts by level of education were considerably larger than the shifts by sexes. In total, the share of high educated employees increased by 2.4 percentage-points (male: +0.5; female: +1.9). Industries with relatively small shifts were manufacturing (+1.3) and trade, hotels, restaurants, cafes and repair services (+2.0). Only transport, storage and communication accounted for a negative shift in the share of high educated employees (-0.7).

Table 8 shows the wage rates by type of employed person and by industry in 1990. On average, women had a much lower wage rate than their male colleagues. In all but one industry, men with low education even had a higher average wage rate than women with high education. As the wage rates have been computed per full-time equivalent worker, this gap is not

caused by the abundance of part-timers among female workers. The wage rates of female with low education were by far the lowest of all workers. The most important employers for this category of employed persons are commercial services and trade, hotels, restaurants, cafes and repair services. Nevertheless, the wage rates of women with low education in these two industries were the lowest of all industries, leaving aside agriculture, forestry and fishing. Opposed to this, men with high education earned their highest average wage rate (68,600 guilders) in commercial services, apart from mining and quarrying and petroleum industry which had a negligible share in total employment (both 0.2%, see table 6). In general, the inter-industry difference in wage rates was larger for male employees than for female employees. Finally, there were also remarkable differences between the wage rates of employees with high and low education. The pattern of differences was rather identical for men and women.

The average annual growth rate of wage rates between 1988 and 1990 is shown in table 9. On average, the wage rate of men with low education had the highest average annual growth rate: 8.0%, that is about 1% higher than other categories of employees. On average, male and female wage rates increased by the same percentage. Leaving aside industries with a low share in total (female) employment, female employees only had a higher wage rate growth than their male colleagues in non-commercial services and in trade, hotels, restaurants, cafes and repair services. Table 9 also shows the shifts in the ratios to the average wage rates by category of employed person. It is clear that the inequality among the distinguished employees has not changed significantly between 1988 and 1990. The same holds for the average wage rates of employed persons by type of industry.

4.2 Allocation of income by primary input category

Submatrix (4,3) records the distribution of generated income (wages and salaries, employers' social contributions and operating surplus/mixed income) among households and other resident sectors, based on the

ownership of the factors of production labour and capital. In column 3.4, the net operating surplus/mixed income has been allocated to the resident sectors[10]. Consumption of fixed capital has been recorded in the row of the capital account. In table 10.1, this matrix is presented in its most detailed form for 1990.

In addition to submatrix (4,3), an identically specified matrix has been compiled. This matrix presents the supply of various labour inputs by each household group. As in the previous subsection, labour has been expressed in full-time equivalents.

As stated above, **only** the wages and salaries of **employees** have been recorded in submatrix (4,3); no imputed labour income has been calculated for self-employed persons. On the other hand, referring to employment, in this SAM two separate tables have been compiled: one which records the labour inputs of employees cross-classified by household group and by type of employed person (table 12.1.a) and another which records the labour inputs of self-employed cross-classified in the same way (table 12.1.b).

The discussion in this subsection focuses on the structure of earnings and the changes thereof between 1988 and 1990. The next subsection will show the number of households and persons per socio-economic subgroup, so that attention then shifts to the income distribution as such.

Total income generated equalled 410 billion guilders in 1990; see table 10.1. In total, 19.8% of generated income accrued to corporations and 80.2% to households. Wages and salaries accounted for a share of 69.7% in generated income of households. It goes without saying that most of it accrued to household groups with wages and salaries as their main source of income (in the following also referred to as: employees' households): 93.3% (= 11.1% + 42.6% + 39.6%). Furthermore, almost 57% of net operating surplus/mixed income accrued to corporations, the rest to

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10. The net operating surplus allocated to household groups consists of the net rental values of owner-occupied dwellings.

households. Employees' households still accounted for a considerable part (26.0%) of operating surplus/mixed income, this mainly concerns the rental values of owner-occupied dwellings.

Table 10.2 indicates that wages of higher-educated persons are overrepresented in single-person employees' households. This applies a priori to females. It also appears that the share of female wages accruing to self-employed households is much larger than the share of male wages. The same applies to households with other transfer income (mostly households depending on social benefits). Apparently, secondary incomes in these groups are mostly earned by women. In addition, whereas almost the same proportion of male and female wages ends up in multi-person households without children, the share of female wages is significantly lower in households with children.

Table 11 presents the growth rates of wages and salaries by household group and category of employed person. Remarkably, the share of female wages accruing to single-person households and households without children has decreased between 1988 and 1990 while this share for multi-person households with children increased. On the other hand, for males a smaller share accrued to multi-person households with children in 1990. In this household group women thus accounted for most of the growth of wages and salaries.

Tables 12.1.a-c and 12.2.a-c present employment (employees, self-employed and total workers) by household group and by type of employed person. Total paid employment measured in full-time equivalents was 4,585,000 and the share of workers living in household groups with wages and salaries as their main source of income in total paid employment was 91.4% (= 11.5% + 43.7% + 36.2%).

The distribution of paid employment over the different household groups deserves further attention. Table 14 shows that the number of multi-person employees' households with children is higher than the number of multi-person households without children. In spite of this, table 12.2.a shows that in the case of paid employment, households without

children supply more labour (43.7% of total supply) than households with children (36.2%). Evidently, it is the more common practice that both partners are working when there are no children. As the table also shows, particularly female employment is much lower in households with children.

In each of the employees' household groups, men with high education accounted for the highest share in paid employment (table 12.2.a). Note the big gaps in the share of high-educated females between single-person households, multi-person households without children and multi-person households with children. Whereas the latter gap is probably related to the withdrawal of females from the labour market when they become mothers, the former gap may be age-related. Single females are probably somewhat younger and better educated than women with a partner. In addition, it is interesting to look at the household groups with mixed income as their main source of income. In these household groups, women had a relative share of 58.0% (23.8% + 34.2%) in paid employment. In general, the male persons within this household group are self-employed, and therefore not included in paid employment; see table 12.2.b.

To get a better insight in the movements of the labour market, tables 13.a-c show the average annual growth rates of employment between 1988 and 1990 for some main aggregates. Single-person households with wages and salaries as their main source of income accounted for a higher average growth rate than other households with the same main source of income. In particular, this related to high-educated employees. The average growth rate of employees living in self-employed households was 29.7% (from a very low base year level) and their share in total employment increased by 2.2 percentage-points to 5.9%. On the contrary, the growth rate of employees' households with children was -2.1% (share: -3.4 percentage-points). In the latter case, this change is in line with the decrease of the number of households in this household group (-2.0%) and the decrease of the number of equivalent persons per household: -0.2% (see table 14). The number of employees per self-employed household, however, must have increased considerably, since the number of households in this household group increased by 4.3%.

By allocating primary input categories to household groups, a start has been made with answering the question *who gets what*. That is to say, it is then known how much income each household group receives from the direct participation in the production process by supplying labour and/or capital. As a result, one has gained an insight in some of the causes for inequality between household groups. In the following, the distribution of other primary income (interest, dividends, etcetera) and the redistribution of income (taxes, social benefits, etcetera) over household groups is also taken into account. Furthermore, attention is paid to the consumption patterns of the household groups distinguished.

4.3 (Re)distribution of income by household group

The primary distribution of income subclassified by institutional sector is recorded in account 4. In each of the submatrices of this account, the sector households has been subdivided into household groups. As a consequence, per household group the following information can be derived from this pilot-SAM:

- how much income each household group receives from direct participation in the production process, subdivided by primary input category (submatrix 4,3);
- how much property income[11)] each household group receives from resident sectors (submatrix 4,4) and from the rest of the world (submatrix 4,14);
- how much property income each household group pays to resident sectors (submatrix 4,4) and to the rest of the world (submatrix 14,4).

In the secondary distribution of income account, the effects of unrequited current transfers on the income level of institutional sectors are registered. Unrequited current transfers mainly consist of income transfers consequent on fiscal and social policy of the government: taxes on income and wealth, social contributions, social benefits, and other current transfers to and from the government such as scholarships and contributions to non-profit institutions.

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11. Here, a third dimension has been introduced by disaggregating each relevant submatrix into different types of property income: interest, dividends and other property income.

In this pilot-SAM, these secondary income transactions have been recorded in account 5. In each of the submatrices of this account, the sector households has also been subdivided into household groups. As a result, the detailed SAM provides a complete picture of the effects of government policies on the distribution of personal income among household groups:

- how much primary income each household group receives as a result of the distribution of primary income (submatrix 5,4);
- how much current transfers each household group receives from resident sectors (submatrix 5,5) and from the rest of the world (submatrix 5,14);
- how much current transfers other than taxes and social contributions[12] each household group pays to resident sectors (submatrix 5,5) and to the rest of the world (submatrix 14,5);
- how much taxes and social contributions each household pays, subdivided by several categories of taxes (submatrix 13,5).

The registration of pension premiums and benefits deserves some more discussion. In the Socio-Economic Accounts (SEA) and also in the SAM, the relevant payments and receipts per household group are regarded as current transfers. As a consequence, the receipts of pension benefits per household group are part of the transactions registered in submatrices (5,5) and (5,14), whereas the payments of pension premiums per household group are recorded in submatrix (13,5). In the system of national accounts on the other hand, these transactions between households and pension funds are registered as financial transactions. There, payments of pension premiums (receipts of pension benefits) are regarded as increases (decreases) in financial assets vis-a-vis pension funds; they are viewed as a kind of (dis)saving by households. As a consequence of our aim to maintain consistency between the SAM and the core national accounts, the relevant transactions between the sector households and the sector insurance enterprises are 'nil' in the distribution of secondary income account. In the SAM, the resulting differences between the sum of

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12. Regarding current transfers other than taxes and social contributions, a third dimension has been introduced by breaking down the submatrices containing these transactions into social benefits (including pension benefits) and other current transfers n.e.c.

the household groups and the sector households are recorded in 'households undivided'. In addition to pensions, there also are other differences in the registration of transactions (among which public health insurance); see annex 2 for a complete description.

Table 14 presents a set of demographic data for each household group distinguished. The number of households characterized as employees' households with children was the largest household group in 1990. However, between 1988 and 1990 this number decreased by -2.0%, while the number of households in the other employees' household groups increased by 7.7% and 2.9%, respectively. Remarkable in this case is that total employment per household decreased in each employees' household group by (almost) the same percentage (-0.4% and -0.5%). The number of self-employed households increased, apart from the number of households engaged in agriculture. Total employment per household in this household group even decreased by -11.8%, in contrast with the households in business and personal services where this figure increased by 20%. In total, the number of households increased by 1.9% to 6,062,000 and the number of equivalent persons by 1.2% to 9,078,000 between 1988 and 1990. Finally, on average, the employment per household increased somewhat (0.2%) to 0.86 full-time equivalents.

Table 15 gives an overview of total income and outlay per household group in 1990. The transactions presented in this table are derived from the relevant submatrices of the most detailed SAM. Unlike the presentation in the SAM, table 15 does not show from whom the households receive their income and to whom they pay their outlays. In table 16, income and outlay per household group have been divided by the number of 'equivalent persons'[13]. The number of households, persons and equivalent persons in each household group are shown in table 14.

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13. The number of equivalent persons is based on the so-called 'Budget Attribution Scale'. In measuring the number of persons relevant for a welfare comparison between household groups, this equivalence scale takes account of economies of scale in household consumption related to size of the household; furthermore, in relation to children only additional expenses are taken into account. See also Schiepers (1991).

On average, total resources in 1990 amounted to 53,000 guilders per equivalent person; see table 16. There were, however, major differences between household groups in the amounts available for spending. Total resources per equivalent person were the highest in the self-employed household groups, ranging from 71,000 guilders for self-employed households in other activities plus those depending on property income up to 104,000 guilders in agriculture. Employees' household groups, on the other hand, received 52,000-53,000 guilders (single-persons households and multi-person households with children) up to 69,000 guilders (multi-person households without children). Not surprisingly, household groups with transfer income (transfers) as their main source of income were worst off: 23,000 guilders per equivalent person for single-person households depending on other transfers up to 43,000 guilders for multi-person pensioners' households.

Taking a closer look at the income components, it appears that receipts of interest and dividends were much higher for self-employed households and for pensioners' households than for all other household groups. In the case of self-employed households, these receipts were more than offset by payments of interest and dividends (i.c. rents on land), etc. Furthermore, table 16 shows that self-employed households engaged in agriculture only received relatively small amounts of wages and salaries (almost 6,000 guilders) in comparison to other self-employed households. These amounts were even lower, though, in households that mainly depend on transfer income. Finally, only single-person households with other transfers as their main source of income received a considerable amount of unrequited current transfers n.e.c.: almost 4,000 guilders per equivalent person. This is mainly caused by scholarships (excluding loans) received by students.

For all households, final consumption expenditure was by far the largest item of total uses. Obviously, there were differences between household groups in the consumption budget per equivalent person. However, consumption inequality between households offers quite different perspectives than inequality between households regarding income. In 1990, total resources per equivalent person ranged from 23,000 guilders

for single-person households with other transfers to 104,000 guilders for self-employed households engaged in agriculture. That is, the ratio between the household group with the lowest income and that with the highest income was 1:4.5. The amounts of total consumption per equivalent person ranged from 18,000 guilders for institutional households to 41,000 guilders for self-employed households engaged in business and other personal services, that is, a ratio of 1:2.3. Probably, inequality in consumption is a better indicator for the degree of relative prosperity of households than inequality in income.

The saving per household category deserves some attention. In the case of single-person households and households with children mainly depending on wages and salaries and on other transfers, this amount was negative in 1990. On the contrary, self-employed households, especially those engaged in agriculture, had a very high saving rate. In this respect, it should be noted that, when compiling the national accounts, saving of the sector households is usually computed as a residual. In this pilot-SAM, less plausible results by household group have not yet led to an adjustment of macro-figures for some transaction categories. It is expected that in the next revision of the national accounts such a feed-back will in fact be applied. Anyhow, the saving by household group will be the subject of further research in the near future.

Table 17 presents the income and outlay items as a percentage of total resources and uses for each household group. At a macro-level, compensation of employees (including employers' social contributions) accounted for more than 55% of total resources. Social benefits (including pension benefits) accounted for 26%. This is twice as high as the proportion of self-employment income (13%). Evidently, the household groups have quite diverging sources of income. For example, almost 82% of total resources of households with children depending mainly on other transfers consisted of social benefits. On the other hand, more than 81% of total resources of the self-employed in agriculture (farmers) consisted of mixed income.

Furthermore, table 17 shows that on average 4.8% (3.4% + 1.4%) of total resources consisted of interest and dividends. Especially pensioners had a high share of these income components: single-person households: 18.1% (12.9 + 5.2%) and multi-person households: 13.0% (9.2% + 3.8%). Regarding the outlays on interest and dividends, on average also 4.8% (4.6% + 0.2%) of total uses was paid. Not surprisingly, self-employed households had the highest share: ranging from 8.8% (8.6% + 0.2%) for households engaged in trade, hotels, restaurants, cafes and repair services to 12.2% (11.3% + 0.9%) for households engaged in agriculture.

There were also major differences in the share of premiums and taxes between household groups. On average, 36.2% (1.9% + 18.2% + 2.9% + 13.2%) of total uses consisted of these outlays. Self-employed households engaged in agriculture and single-person households depending on transfers in connection with old age had the lowest shares (18.2% and 20.1%, respectively), whereas employees' households had the highest shares (ranging from 41.3 to 44.1%).

Inequality among households is also reflected in the share of final consumption expenditure in total uses per household group. On a macro-level, 53.4% of total uses accrued to final consumption expenditure. In households that mainly depended on other transfers, the share of consumption expenditure in total uses ranged from 69.9% for those with children to 85.9% for single-person households. Meanwhile, the amount per equivalent person consumed by these categories of households was by far the lowest, apart from persons in institutions (see table 16). Summarizing, single-person households and households with children that mainly depend on other transfers were worst off; they even had negative saving. On the other hand, self-employed households and multi-person employees' households without children were best off.

In table 18, the average annual growth rates of income and outlay per equivalent person are shown. For all households, total resources increased by 4.7% annually. Employees' households and households with other transfers as their main source of income (excluding households

without children) had below average growth rates. Total resources of single-person employees' households even did not change at all between 1988 and 1990. On the other hand, self-employed households (especially those engaged in agriculture, and in other activities and property income) had relatively high increases of their income. To a less extent, this also applied to pensioners. In single-person households and households with transfers in connection with old age saving per equivalent person decreased. In the case of pensioners, this coincided with an above average growth rate of their final consumption expenditure. Surprisingly, consumption growth was also fairly high (5.6%) in childless households that mainly depend on other transfers.

4.4 Use of disposable income by household group

The use of net disposable income subclassified by institutional sector is recorded in account 6. In this account, final consumption expenditure of households (and general government) has been subclassified by 51 groups of goods and services, whereas the sector households has been subdivided into household groups.

In this subsection, final consumption expenditure of household groups is presented at a more aggregated level; see tables 19 and 20. The relation between the classification of goods and services used in this table and the one used in submatrix (1,6) of the detailed SAM is shown in annex 4.

Table 19 shows the budget shares of the each product group per household group in 1990. On average, 12.5% was spent on food products, 6.0% on tobacco and beverages, 8.0% on clothing, textile and leatherware, 15.4% on services of dwellings.

In general, households with other transfers as their main source of income spent a higher share on food products than other household groups: 15.0%. These households also spent the highest share of their budget (7.0%) on tobacco and beverages. However, as regards consumption per equivalent person on these items they spent less than the other household

groups. Concerning dwelling services and electricity, gas and water, the pensioners spent the highest share of their consumption budget on these items: 23.9% (= 18.8% + 5.1%). Not surprisingly, the share of financial and business services in total consumption was the highest for the self-employed households: 4.8%. Finally, it is clear that institutional households had a somewhat different consumption pattern than private households. For example, the institutional households spent 67% of their consumption budget on other goods and services, while on average, this percentage was 20.2% in 1990. The obvious reason for this is that other goods and services includes medical, health and other community services.

Table 20 shows the consumption patterns of all household groups. In this table, the differences between the household groups become more obvious than in table 19. From table 19, one could conclude that the consumption patterns of the household groups do not differ considerably, leaving aside institutional households. From table 20, however, one can derive that there are substantial differences in the consumption patterns between single-person households and multi-person households. Single-person households spent a smaller share of their budget on food products in comparison with other households with the same source of income. For example, single-person employees' households spent 9.1% of their budget on food, while the employees' households without children and with children spent 11.4% and 13.7%, respectively, of their budget on food. On the other hand, single-person households spent higher proportions of their consumption budget on dwelling services than other households. These households also spent higher shares of their budget on meals, drinks and lodging, and on transport, communication and repair services. Summarizing, differences in consumption patterns between households depend less on the source of income than on the household composition.

5. Concluding remarks

In this paper, the results of a research-project on the pilot-compilation of a SAM for the Netherlands have been discussed. It was possible to link national accounts, Socio-Economic Accounts (SEA) and Labour Accounts (LA) within a matrix-framework like the SAM. As a starting-point, 1988 and 1990 have been chosen as reference-years.

Several striking results can be derived from the pilot-SAMs for 1988 and 1990. First, female employees accounted for 23.6% of total paid employment (full-time equivalents) in 1990. As a result of relatively high growth rates in the number of female employees (4.6% per year on average in the period 1988-1990), the share of female employees increased by 1.4 percentage-points from 1988 to 1990. Especially women with a high education level were in greater demand; the average annual growth rate for this category was 8.1%. Regarding wage rates, it is striking that in most industries male employees with low education earned more than female employees with high education.

Secondly, although multi-person employees' households without children only accounted for 22.2% of the total number of households in 1990, this household group supplied 47% of the female employees. Furthermore, there were big gaps between single-person households, multi-person households without children and multi-person households with children concerning the shares of high-educated females in paid employment. As stated in the above, the latter gap is probably related to the withdrawal of females from the labour market when they become mothers. The former gap may be age-related: single females are probably somewhat younger and better educated than women with a partner. Surprisingly, the average annual growth rate of employees in self-employed household groups equalled 29.7%. As a consequence, their share in total paid employment increased by 2.2 percentage-points.

Thirdly, on average, the growth rate of the number of households equalled 1.9% between 1988 and 1990. Noteworthy, the number of single-

person employees' households and self-employed households in trade, hotels, restaurants, cafes and repair services increased considerably: 7.7% and 11.2, respectively. The average number of persons per household decreased somewhat (-1.2%) just as the number of equivalent persons per household (-0.7%). This applied to almost all household groups. Next, the growth rate of total employment in the self-employed household groups was fairly striking: 20%, whereas the average annual growth rate of the number of households in the self-employed household groups was only 4.2%. After all, this resulted in a growth rate of employment per household of more than 10%. On the contrary, total employment per household in multi-person households with other transfers decreased: -11.8% annually for those households without children and -8.9% for those with children. Furthermore, total employment per household in all employees' household groups decreased somewhat between 1988 and 1990.

Fourtly, regarding income per equivalent person in 1990, there were significant differences between the distinguished household groups. Total resources of households with other transfers as their main source of income was lowest: 23,000 guilders per equivalent person for single-person households up to 38,000 guilders for multi-person households without children. On the other hand, self-employed households had the highest income level: 71,000 guilders for households engaged in other activities plus those depending on property income, up to 104,000 guilders for households engaged in agriculture. Between 1988 and 1990, average annual growth rates of total resources were lowest for employees' households.

Inequality among households is also reflected in the total amounts used for consumption expenditure. As regards welfare, this offers different perspectives than the inequality among households in total resources (income). The ratio between the household group with the lowest and the group with the highest income was 1:4.5 in 1990, whereas the ratio between the household group with the lowest amount of consumption expenditure and the group with the highest was only 1:2.3.

Finally, households depending mainly on other transfers spent a higher share of their consumption budget on food products and on tobacco and beverages than other households. However, the consumption per equivalent person on these items was lower. Furthermore, differences in consumption patterns between households depend less on the source of income than on the household composition.

The pilot-project can be seen as a sort of ex post approximation of a SAM. It serves as a first step towards a regular compilation of SAMs in the future, including a feed-back to national accounts totals. During the compilation of the SAM for the Netherlands, several gaps between economic and socio-economic data were encountered. Regarding this, it can be concluded that one of the results of this pilot-project is that it pin-pointed some bottle-necks in the linkage between the national accounts, the SEA and the LA (cf. section 4.3 above).

As a core system, the SAM can be extended with several modules on social, demographic and environmental phenomena[14]. This extended set of tables is called: a System of Economic and Social Accounting Matrices and Extensions or SESAME (Keuning, 1994b and United Nations, 1993). Key features of SESAME are: *integration and multiple classifications*. In other words, a conceptual and numerical framework of all kinds of related monetary and non-monetary phenomena, which are expressed in different measurement units.

To end with, a SAM like the one presented in this paper has several possible applications. First, a SAM can be used as an instrument to enhance the reliability of statistical data. By combining data from a great variety of sources at a low level of aggregation, inconsistencies between data are traced and (eventually) solved. Saving by household group is a good example in this respect. Furthermore, all kinds of analyses can be applied with a SAM. In addition to straightforward multiplier analyses, a SAM can be a useful instrument in the construction

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14. A module can be defined as a set of statistical information which can be linked directly to the central system (Gorter and Van der Laan, 1989).

of Computable General Equilibrium (CGE) models; see e.g. Zeelenberg et al. (1991) and Gelauff (1992). Finally, based on a SAM, macro-economic objectives, the labour market and distributional issues can be analyzed in an integrated way. SAM-based studies would show not only how, for example, fiscal policy of the government affects GDP, the government deficit and the current external balance. In addition, the consequences on (parts of) the labour market and the income distribution among households would be revealed.

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Annex 1: Statistical sources

The present system of national accounts contains a detailed description of the production process. Many categories of products and industries are distinguished here. For example, the most detailed supply and use tables for the Netherlands contain a breakdown into approximately 250 industries and 800 product groups. On the other hand, however, labour is treated as a single, homogeneous factor of production; no details on the composition of labour (educational level, sex, occupation, etcetera) are provided. So, when analyzing the inputs needed for the production of a particular industry, abundant data are available on the inputs of raw materials and semi-manufactured articles, but one lacks detailed information on the input of labour.

Another area in which the present national accounts contain insufficient data, is the distribution and use of income among household groups. Figures are only available for the sector households as a whole. At present, this sector even includes the non-profit institutions serving households such as sports clubs, trade unions, etcetera. As a consequence, shifts in income (in)equality and the development of consumption patterns among household groups cannot be studied in relation to national accounts data.

On both topics, labour market as well as distribution and use of income among household groups, the CBS provides extensive information in two partially integrated frameworks: the Labour Accounts (LA) and the Socio-Economic Accounts (SEA). However, because of differences in definitions, classifications and estimates, it is not easy for outsiders to integrate these frameworks with national accounts data. As stated in the introductory section of this paper, this integration is the objective of the pilot-project on the compilation of a SAM for the Netherlands. This annex dwells upon the information available in the LA and the SEA, respectively.

The LA[1)] are an integrated framework that presents a statistical review of the Dutch labour market. The core of the system is made up by data on paid labour of employed persons. For 81 industries, data are collected on the number of jobs, the hours worked (per job), wages and salaries, etcetera. Furthermore, the figures on employed persons per industry are subdivided by sex, level of education, full-time/part-time jobs, etcetera. The region of employment is also included in the subclassifications.

The LA integrate data from various micro sources on households and enterprises. One of the most important surveys on households is the Labour Force Survey (LFS). In the LFS, data on jobs, industry of employment, hours worked and level of education are collected from households. The enterprise surveys use data from corporations and administrations. Examples of this kind of survey are the Yearly Earnings Survey and the Wage-Sum Survey. Integrating data from all these micro sources yields very useful information at a meso level. The results are published in the annual publication "Arbeidsrekeningen" (e.g. CBS, 1993b).

In the SAM, data from the LA have mainly been used to cross-classify wages and salaries and (paid) employment per industry by sex and level of education.

The SEA[2)] give an overall picture of the income and consumption patterns of various types of private households and of institutional households. The SEA distinguish 52 household groups. The successive criteria for the subdivision of households are:
- category (private versus institutional households);
- household composition (number of members and age structure);
- main source of income (wages and salaries, current transfers, entrepreneurial income and property income) and

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1. For a more comprehensive description of the Labour Accounts, see e.g. Altena et al. (1991), Leunis and Keuning (1994) and CBS (1993b)
2. For a more comprehensive description of the Socio-Economic Accounts, see e.g. Den Dulk et al. (1991) and Gorter and Van der Laan (1992).

- size of income.

The data for the transactions of these household groups are derived from various micro sources and are made consistent within the SEA-framework. The most important micro sources are the Statistics of Income Distribution and the Budget Survey. The Statistics of Income Distribution provide detailed information on the composition of income of private persons and households in the Netherlands. The Budget Survey provides detailed data on the household consumption expenditure in the Netherlands.

As a result of the integration of data from various micro-sources, a complete description of the various components of receipts and outlays (mixed income from entrepreneurial activities, wages and salaries, interest, dividends, social benefits, etcetera) and consumption expenditure is obtained. Micro sources on households, however, contain major problems of underreporting. Well-known examples are the interest receipts and the consumption of alcoholic beverages and tobacco. Therefore, data for the sector households of the national accounts are used as a benchmark estimate for the level of the transactions of all household groups in the SEA. The results are published in the publication "Sociaal-economische rekeningen" (e.g. CBS, 1994b).

In the SAM, the data from the SEA have been used for a further breakdown of the sector households. This relates to the (primary and secondary) distribution of income account as well as to the use of disposable income account.

Finally, additional information from the sources underlying the LA and SEA has been used to cross-classify wages and salaries and employment per household group by sex and level of education.

Annex 2: The linkage between the national accounts and the SEA

Although in most cases the sum of transactions by household group in the Socio-Economic accounts (SEA) is equal to the figure in the national accounts, there are some discrepancies. These are mainly caused by conceptual differences between the national accounts and the SEA concerning registrations of income transactions of households[3]. In this pilot-SAM, the usual way of registration adopted in the national accounts has been followed.

However, it was not possible to remove all discrepancies concerning the registration of transactions. For this purpose, a fictive household group, called 'households undivided' has been added in some instances[4]. In table A.1, the components of this 'households undivided' group have been specified for each transaction category. The main element consists of transactions concerning non-profit institutions (NPIs) serving households. In the national accounts, the sector households includes NPIs serving households; this is not the case in the SEA[5].

Other causes of difference are the registration of transactions concerning pensions and other life insurance. In the SEA, the premiums and benefits concerning pensions and other life insurance are considered as secondary income transfers, whereas in the national accounts these transactions are registered as a kind of saving by households, i.e. as changes in actuarial reserves. Furthermore, in the system of national accounts, interest which equals the returns on investment of actuarial reserves by insurance companies and pension funds is imputed as a primary income transaction from the insurance sector to households; in the financial account, this item is then registered as a change in actuarial

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3. For more information on the differences between the national accounts and the SEA, see e.g. Gorter and Van der Laan (1992), CBS (1994a), part III, p.247-252, and CBS (1994b).
4. The method used by SEA to link up with the totals of the accounts of national accounts is the creation of intermediate funds, which indicate the differences between the two systems by cause.
5. The construction of an income and outlay account for NPIs is laborious but cannot be avoided because of the importance of NPIs in the aggregate. This is also acknowledged in the 1993 SNA. Further estimation must be done to fit these figures into a SAM (Stone, 1985).

Table A.1: Linkage between SAM and National accounts, 1990

	Total subdivided to households in SAM	NPIs	Pension- and life-insurance	Public health insurance	Cash-/ transaction difference	Other differences	Differences in rounding	Total National accounts
Wages and salaries	229290	-		-	-	-	-	229290
Employers' social contributions	38178	-		-	-	-	-8	38170
Net operating surplus/mixed income	61367	-		-	-	-	3	61370
Interest	16633	1807		-	-	-	-	18440
Dividends etc.	6590	1009		-	-	-	1	7600
Imputed interest on actuarial reserves	-	-	39480	-	-	-	-	39480
Social benefits	123445	-	-18750	29831	-	134	-10	134650
Unrequited current transfers n.e.c.	6789	15140		-	-	180	1	22110
Total resources	482292	17956	20730	29831	-	314	-13	551110
Interest	22268	130	-	-	-	-	2	22400
Dividends etc.	890	-	-	-	-	-	-	890
Imputed social contributions	9251	-	-	-	-	-	-1	9250
Social security premiums	87902	-	-	-	-	-	8	87910
Pension premiums	13810	-	-13810	-	-	-	-	0
Taxes on income and wealth	63793	-		-	-2190	-	7	61610
Unrequited current transfers n.e.c.	8146	550		-	-	260	4	8960
Final consumption expenditure	257615	12017	3640	29831	-	-	-3	303100
Savings	18617	5259	30900	-	2190	54	-30	56990
Total uses	482292	17956	20730	29831	-	314	-13	551110

reserves. From SEA's point of view, these returns on investment are not part of the income of households. A choice between these two alternative registration methods strongly influences the determination of disposable income and saving of the household sector.

The way in which the public health insurance is treated also differs between the two systems. In the national accounts, the medical care and health expenses covered by social security funds are registered as final consumption expenditure of households; on the other hand, households receive social benefits to pay for these goods and services. In the SEA, both transactions are not registered. The reason for this is lack of information on the distribution of these expenses (and related social benefits) among household groups. In fact, for private health insurance the same holds. However, in this case the figures from the SEA have been adjusted to fit with the registration in the national accounts.

Finally, there are differences in the time of recording of taxes on income, wealth, etc. In national accounts, these transactions are recorded on a cash basis, i.e. at the time the taxes are actually paid and received. On the other hand, the figures per household group available from the SEA are recorded on an accrual basis, i.e. at the time the taxable income is earned.

Annex 3: Classifications in the detailed SAM

Account 1: Goods and services account

Number	Product groups
1.1	Cattle
1.2	Flowers and plants
1.3	Potatoes, vegetables and fruits
1.4	Meat and canned meat
1.5	Fish
1.6	Milk, cheese and eggs
1.7	Bread and cereals
1.8	Foodstuffs and agricultural products
1.9	Sweet stuff and consumer ice
1.10	Tobacco
1.11	Beverages
1.12	Clothing and textiles
1.13	Fashion-, leather- and footware
1.14	Paper and paperware
1.15	Books, newspapers and magazines
1.16	Petroleum (products) and other power carriers (excl. gas)
1.17	Gas
1.18	Electricity and water
1.19	Miscellaneous materials and supplies of chemistry and rubber
1.20	Cleansing products, cosmetics and other chemical goods
1.21	Materials and supplies metal
1.22	Machines, installations and accessories
1.23	Passenger cars and trucks
1.24	Trams and trains
1.25	Ships and aeroplanes
1.26	Other transport equipment and accessories
1.27	Household appliances
1.28	Audio-visual articles
1.29	Office- and house-furnishing
1.30	Durables, n.e.c.
1.31	Rentals of dwellings and non-residential buildings
1.32	Rental value of dwellings
1.33	Wood- and building materials (glass included)
1.34	Construction
1.35	Expenditure in restaurants, cafes and hotels
1.36	Repair services
1.37	Communication services
1.38	Transport services
1.39	Financial and business services
1.40	Entertainment, recreational and cultural services
1.41	Medical services
1.42	Public services
1.43	Education
1.44	Medical, health and other community services
1.45	Wage-services and processing
1.46	Own account fixed capital formation
1.47	Goods in progress
1.48	Used fixed capital goods
1.49	Goods and services, n.e.c.
1.50	Trade- and transport margins
1.51	Trade services

Account 2: Production account

Number	Industries
2.1	Agriculture and forestry
2.2	Fishing
2.3	Crude petroleum and natural gas production
2.4	Other mining and quarrying
2.5	Food industry
2.6	Beverage and tobacco-processing industry
2.7	Textiles industry
2.8	Clothing industry
2.9	Leather, footwear and other leatherware (excl. clothing)
2.10	Wood and furniture industry (excl. metal furniture)
2.11	Paper and paper products industry
2.12	Printing, publishing and related industries
2.13	Petroleum industry
2.14	Chemical, rubber and plastic-processing industry
2.15	Manufacture of building materials, earthenware, glass and glass products
2.16	Basic metal industry
2.17	Manufacture of metal products
2.18	Machinery
2.19	Electrotechnical industry
2.20	Manufacture of transport equipment
2.21	Manufacture of instruments and optical goods and other industry
2.22	Public utilities
2.23	Construction and installation on construction projects
2.24	Wholesale and retail trade and repair of consumer goods
2.25	Hotels, restaurants, cafes etc.
2.26	Sea and air transport
2.27	Other transport and storage
2.28	Communication
2.29	Banking
2.30	Insurance
2.31	Exploitation of and trade in real estate
2.32	Business services
2.33	Public administration and compulsory social security
2.34	Defence
2.35	Education
2.36	Social services etc.
2.37	Health and veterinary services
2.38	Cultural, sports and recreational services
2.39	Other services
2.40	Private households with wage-earning staff
2.41	Goods and services n.e.c.
2.42	Imputed bank services

Account 3: Generation of income account

Number	Primary input categories
3.1a	Wages and salaries: men with basic education
3.1b	Wages and salaries: men with lower general secondary education (MAVO)
3.1c	Wages and salaries: men with higher general secondary education (HAVO/VWO)
3.1d	Wages and salaries: men with lower vocational education
3.1e	Wages and salaries: men with middle vocational education
3.1f	Wages and salaries: men with higher vocational education
3.1g	Wages and salaries: men with university training
3.1h	Wages and salaries: women with basic education
3.1i	Wages and salaries: women with general secondary education (MAVO)
3.1j	Wages and salaries: women with general secondary education (HAVO/VWO)
3.1k	Wages and salaries: women with lower vocational education
3.1l	Wages and salaries: women with middle vocational education
3.1m	Wages and salaries: women with higher vocational education
3.1n	Wages and salaries: women with university training
3.2	Employers' social contributions
3.3	Consumption of fixed capital
3.4	Operating surplus/mixed income (net)

Account 4: Distribution of primary income account

Number	Institutional sectors
4.1	Non-financial corporate and quasi-corporate enterprises
4.2	Credit institutions
4.3	Insurance companies and pension funds
4.4	Central government
4.5	Local government
4.6	Social security funds
4.7	Households
4.7a	Single-person households with wages and salaries
4.7b	Multi-person households without children with wages and salaries
4.7c	Multi-person households with children with wages and salaries
4.7d	Households with mixed income from agriculture
4.7e	Households with mixed income from trade, hotels, restaurants, cafes and repair services
4.7f	Households with mixed income from business and personal services
4.7g	Households with mixed income from other activities, and property income
4.7h	Single-person households with transfer income in connection with old age
4.7i	Multi-person households with transfer income in connection with old age
4.7j	Single-person households with other transfer income
4.7k	Multi-person households without children with other transfer income
4.7l	Multi-person households with children with other transfer income
4.7m	Persons in institutions (institutional households)
4.7n	Households undivided

Account 5: Distribution of secondary income account

Number	Institutional sectors
See account 4	

Account 6: Use of disposable income account

Number	Institutional sectors
6.1	Non-financial corporate and quasi-corporate enterprises
6.2	Credit institutions
6.3	Insurance companies and pension funds
6.4	General government
6.5	Households
6.5a	Single-person households with wages and salaries
6.5b	Multi-person households without children with wages and salaries
6.5c	Multi-person households with children with wages and salaries
6.5d	Households with mixed income from agriculture
6.5e	Households with mixed income from trade, hotels, restaurants, cafes and repair services
6.5f	Households with mixed income from business and personal services
6.5g	Households with mixed income from other activities, and property income
6.5h	Single-person households with transfer income in connection with old age
6.5i	Multi-person households with transfer income in connection with old age
6.5j	Single-person households with other transfer income
6.5k	Multi-person households without children with other transfer income
6.5l	Multi-person households with children with other transfer income
6.5m	Persons in institutions (institutional households)
6.5n	Households undivided

Account 7: Capital account

Number	Institutional sectors
7.1	Non-financial corporate and quasi-corporate enterprises
7.2	Credit institutions
7.3	Insurance companies and pension funds
7.4	Central government
7.5	Local government
7.6	Social security funds
7.7	Households

Account 8: Account for fixed capital formation and changes in inventories

Number	Investment categories
8.1	Fixed capital formation (gross)
8.2	Changes in inventories
8.3*	Net purchases of land

* This category is only distinguished in the row of the account

Account 9: Account for the allocation of investments

Number	Industries	
9.1	Agriculture, forestry and fishing	(2.1+2.2)
9.2	Mining and quarrying	(2.3+2.4)
9.3	Food, beverage and tobacco-processing industry	(2.5+2.6)
9.4	Textiles industry	(2.7)
9.5	Clothing industry	(2.8)
9.6	Leather, footwear and other leatherware (excl. clothing)	(2.9)
9.7	Wood and furniture industry (excl. metal furniture)	(2.10)
9.8	Paper and paper products industry	(2.11)
9.9	Printing, publishing and related industry	(2.12)
9.10	Petroleum industry	(2.13)
9.11	Chemical, rubber and plastic-processing industry	(2.14)
9.12	Manufacture of building materials, earthenware, glass and glass products	(2.15)
9.13	Basic metal industry	(2.16)
9.14	Manufacture of metal products	(2.17)
9.15	Machinery	(2.18)
9.16	Electrotechnical industry	(2.19)
9.17	Manufacture of transport equipment	(2.20)
9.18	Manufacture of instruments and optical goods and other industry	(2.21)
9.19	Public utilities	(2.22)
9.20	Construction and installation on construction projects	(2.23)
9.21	Wholesale and retail trade and repair of consumer goods	(2.24)
9.22	Hotels, restaurants, cafes etc.	(2.25)
9.24	Sea and air transport	(2.26)
9.25	Other transport and storage	(2.27)
9.26	Communication	(2.28)
9.27	Operation of dwellings	(2.31 excl. SBI 83.12)
9.28	Business services	(2.32 excl. SBI 86)
9.29	Public administration and compulsory social security	(2.33)
9.30	Defence	(2.34)
9.31	Education	(2.35)
9.32	Health and veterinary services	(2.37)
9.33	Other services	(2.39)
9.34	Other	(2.29+2.30+2.36+2.38+SBI 83.12+SBI 86)

Account 10: Account for types of investments

Number	Types of fixed assets
10.1	Dwellings and non-residential buildings
10.2	Civil engineering works
10.3	External transport equipment
10.4	Increase in livestock
10.5	Machinery and other equipment
10.6	Transfer costs

Account 11: Financial account

Number	Institutional sectors
See account 7	

Account 12: Financial account

Number	Types of financial assets
12.1	Financial gold
12.2	Net position in international monetary institutions
12.3	Currency and transferable sight deposits in national currency
12.4	Currency and transferable sight deposits in foreign currency
12.5	Other deposits in national currency
12.6	Savings deposits in national currency
12.7	Other deposits and savings deposits in foreign currency
12.8	Bills and short-term bonds
12.9	Long term bonds
12.10	Shares and other equities
12.11	Short term credit n.e.c.
12.12	Medium and long term credit n.e.c.
12.13	Actuarial reserves
12.14*	Trade credit and accounts receivable and payable, in as far as observed (net)
12.15*	Statistical discrepancy

* This category is only distinguished in the row of the account

Account 13: Tax account

Number	Types of taxes
13.1	VAT
13.2	Excises
13.3	Environmental taxes
13.4	Taxes on imports (excluding VAT)
13.5	Other taxes on production
13.6	Subsidies
13.7	Taxes on income
13.8	Taxes on wealth, etc.
13.9	General social insurance premiums
13.10	Employees social insurance premiums
13.11	Imputed social contributions
13.12	Pension premiums

Annex 4: Linkage between classifications presented in the paper and the detailed classifications

Account 1: Goods and services account

Number	Product groups	
1.a	Food products	1.1 up to 1.8
1.b	Tobacco, beverages	1.9 up to 1.11
1.c	Clothing, textile and leatherware	1.12 + 1.13
1.d	Books, magazines and papers	1.14 + 1.15
1.e	Motor fuel	1.16
1.f	Electricity, gas and water	1.17 + 1.18
1.g	Transport equipment	1.23 up to 1.26
1.h	Household appliances and interior decorating	1.27 up to 1.29
1.i	Services of dwellings	1.31 + 1.32
1.j	Meals, drinks and lodging	1.35
1.k	Transport, communication and repair services	1.36 up to 1.38
1.l	Financial and business services	1.39
1.m	Recreational and cultural services	1.40
1.n	Other goods and services	1.19 up to 1.22 + 1.30 + 1.33 + 1.34 + 1.41 up to 1.50

Account 2: Production account

Number	Industries	
2.a	Agriculture, forestry and fishing	2.1 + 2.2
2.b	Mining and quarrying	2.3 + 2.4
2.c	Manufacturing	2.5 up to 2.12 + 2.14 up to 2.21
2.d	Petroleum industry	2.13
2.e	Public utilities	2.22
2.f	Construction	2.23
2.g	Trade, hotels, restaurants, cafes and repair	2.24 + 2.25
2.h	Transport, storage and communication	2.26 up to 2.28
2.i	Commercial services	2.29 up to 2.32 + 2.39 up to 2.42
2.j	General government services and education	2.33 up to 2.35
2.k	Non-commercial services	2.36 up to 2.38

Annex 5: The contents of the floppy disks with SAM-tables

The tables of the detailed (254*251) SAMs for the years 1988 and 1990 are available on two floppy disks. Each submatrix of the SAM has been recorded in a separate spreadsheet (.WK1 file). Table A.2 gives an overview of all transactions and balancing items of the consolidated SAM for the Netherlands and shows at the same time the titles of the spreadsheets containing the respective transactions and balancing items. The titles of the spreadsheets correspond with the row and column number of the cell c.q. submatrix.

Some spreadsheets contain more than one table, for example M3'2.WK1 (see table A.2). This file contains two tables:

1. Gross Domestic Product cross-classified by industry and by primary input category.
2. Labour input of employees cross-classified by industry and by type of employed person.

The same holds for the file M4'3.WK1, which contains Net National Generated Income and labour input of employees, both cross-classified by primary input category and institutional sector.

Furthermore, some files contain a further breakdown of the transactions concerned. For example, in file M4'4.WK1, the first matrix contains property income cross-classified by receiving and paying institutional sector while in three 'underlying' submatrices within the same file the transactions which constitute this income component are shown: interest, dividends and other property income.

Table A.2: An overview of the tables on the floppy disks in which the 1988 and 1990 detailed (254*251) SAMs are presented, block by block

		1. Goods and services	2. Production	3. Generation of income	4. Primary income distribution	5. Secondary income distribution	6. Use of disposable income	7. Capital	8. Fixed capital formation and changes in inventories	9. Allocation of investments	10. Type of investments	11. Financial	12. Financial	13. Tax account	14. Rest of the world (ROW) (current)	15. Rest of the world (ROW) (capital)	TOTAL
	Classifications	Products groups (1.1-1.51)	Industries (2.1-2.42)	Primary input categories (3.1a-3.4)	Institutional sectors (4.1-4.7n)	Institutional sectors (5.1-5.7n)	Institutional sectors (6.1-6.5n)	Institutional sectors (7.1-7.7)	(8.1-8.2)	Industries (9.1-9.34)	Types of fixed assets (10.1-10.6)	Institutional sectors (11.1-11.7)	Types of financial assets (12.1-12.13)	Categories of taxes and subsidies (13.1-13.12)			
1. Goods and services	Products groups (1.1-1.51)	Trade and transport margins M1'1.WK1	Intermediate consumption M1'2.WK1				Final consumption M1'6.WK1		Changes in inventories M1'8.WK1		Gross fixed capital formation M1'10.WK1				Exports of goods and services (fob) M1'14.WK1		Use, purchasers' prices
2. Production	Industries (2.1-2.42)	Output, basic prices M2'1.WK1															Output, basic prices
3. Generation of income	Primary input categories (3.1a-3.4)		Gross Domestic Product (factor cost M3'2.WK1											VAT not handed over to the government M3'13.WK1	Compensation of employees from ROW M3'14.WK1		Generated income
4. Primary income distribution	Institutional sectors (4.1-4.7n)			Net National Generated Income M4'3.WK1	Property income M4'4.WK1									Taxes less subsidies on production M4'13.WK1	Property income from ROW M4'14.WK1		Quid-pro-quo income
5. Secondary income distribution	Institutional sectors (5.1-5.7n)				Net National income, market prices M5'4.WK1	Unrequited current transfers, n.e.c. M5'5.WK1								Taxes on income and wealth and social contributions M5'13.WK1	Unrequited current transfers from ROW M5'14.WK1		Secondary income
6. Use of disposable income	Institutional sectors (6.1-6.5n)					Net Disposable National Income M6'5.WK1											Disposable income
7. Capital	Institutional sectors (7.1-7.7)			Consumption of fixed capital M7'3.WK1			Net National Saving M7'6.WK1	Unrequited capital transfers M7'7.WK1								Unrequited capital transfers from ROW M7'15.WK1	Capital income
8. Fixed capital formation and changes in inventories								Fixed capital formation and changes in inventories M8'7.WK1									Fixed capital formation and changes in inventories
9. Allocation of investments	Industries (9.1-9.34)								Fixed capital formation from production and imports M9'8.WK1								Fixed capital formation from output and imports
10. Type of investments	Types of fixed assets (10.1-10.6)								Sales of used fixed capital goods M10'8.WK1	Fixed capital formation from production and imports M10'9.WK1							Fixed capital formation
11. Financial	Institutional sectors (11.1-11.7)							Net Lending of the Total Economy M11'7.WK1					Changes in liabilities M11'12.WK1				Changes in financial assets
12. Financial	Types of financial assets (12.1-12.15)											Changes in financial assets M12'11.WK1				Changes in liabilities vis-a-vis the ROW M12'15.WK1	Total changes in financial assets
13. Tax account	Categories of taxes and subsidies (13.1-13.12)	Taxes less subsidies on products M13'1.WK1	Other taxes less subsidies on production M13'2.WK1			Taxes on income and wealth and social contributions					VAT on land and other levies on fixed capital assets M13'10.WK1				Taxes received from the rest of the world M13'14.WK1		Taxes less subsidies and social contributions
14. Rest of the world (current)		Imports of goods and services (cif) M14'1.WK1		Compensation of employees to ROW M14'3.WK1	Property income to ROW M14'4.WK1	Unrequited current transfers to ROW M14'5.WK1								Taxes paid to the rest of the world M14'13.WK1		Current external balance M14'15.WK1	Current flows to the rest of the world
15. Rest of the world (capital)								Unrequited capital transfers to ROW M15'7.WK1					Changes in financial assets vis-a-vis the ROW M15'12.WK1				Capital flows to the rest of the world
TOTAL		Supply, market prices	Input, basic prices	Allocation of generated income	Destination of quid-pro-quo income	Destination of secondary income	Current expenditure	Capital expenditure	Fixed capital formation and changes in inventories	Fixed capital formation from production and imports	Fixed capital formation capital	Changes in financial assets	Total changes in liabilities	Taxes less subsidies and social distributions	Current flows from the rest of the world	Capital flows from the rest of the world	

Statistics Netherlands
National Accounts Occasional Papers

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

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

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

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

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

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

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 contain an integrated meso-economic statistical system. It is essential that the next SNA contains an institutional system without the imputations 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 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**, De Boer, S. and G.A.A.M. Broesterhuizen (1986).
A few years ago the method of compiling input-output tables underwent in the Netherlands an essential revision. The most significant improvement is that during the entire statistical process, from the 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.

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 discussed. 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 application to the Netherlands, 1940-1945**, Van Bochove, C.A. and W. van Sorge (1987).

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

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

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

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

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

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

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

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

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

NA/29 **The concept of (transactor-)units in the National Accounts and in the basic system of economic statistics**, Bloem, 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 Quarterly Accounts-indicators are also presented.

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

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

NA/34 **How to treat borrowing and leasing in the next SNA**, Keuning, Steven J. (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 international 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 classifications 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/57_Ext.**).

NA/57_Ext. Compiling Dutch Gross National Product (GNP); full report on the final estimates after the revision in 1992, Bos, Frits and Cor N. Gorter (1993).
This report describes the compilation of 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. The description covers i.a. data sources, sampling features of the surveys, grossing up procedures, adjustments for underreporting and the integration process.

NA/58 The 1987 revision of the Netherlands' National Accounts, Van den Bos, C and P.G. Al (1994).
The 1987 revision that was completed 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 Dutch agricultural accounts, Pauli, Peter and Nico van Stokrom (1994).
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).
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 Analyzing economic growth: a description of the basic data available for the Netherlands and an application, Van Leeuwen, George, Hendrie van der Hoeven and Gerrit Zijlmans (1994).
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. The STAN database is also available on floppy disk at the costs of DFL. 25, an can be ordered by returning the order form below (Please mention: STAN floppy disk).

NA/66 Comparability of the sector General Government in the National Accounts, a case study for the Netherlands and Germany, Streppel, Irene and Dick Van Tongeren (1994).
This paper questions the international comparability of data concerning the sector General Government in the National Accounts. Two differences are distinguished: differences due to lack of compliance with international guidelines and institutional differences. Adjustments to National Accounts data are reflected in a separate module which comparises Germany versus The Netherlands. The module shows that total General Government resources as well as uses are substantially higher in the Netherlands.

NA/67 What would Net Domestic Product have been in an environmentally sustainable economy?, Preliminary views and results, De Boer, Bart, Mark de Haan and Monique Voogt (1994).
Sustainable use of the environment is a pattern of use that can last forever, at least in theory. This pattern is likely to render a lower net domestic product than the present economy. The coherence between reductions in pressure on the environment and changes in net domestic product is investigated with the help of a simple multiplier model. This model is based on a National Accounting Matrix including Environmental Accounts (NAMEA).

NA/68 A Social Accounting Matrix for the Netherlands, concepts and results, Timmerman, Jolanda G. and Peter J.M. van de Ven (1994).
In this paper a Social Accounting Matrix (SAM) for the Netherlands is presented. Two years are covered: 1988 and 1990. The SAM is an integrated data framework based on national accounts extended with information on distribution of income, consumption and wealth among household. Furthermore, labour income and employment are subdivided into several labour categories. The tables of the SAMs of both 1988 and 1990 are available on separate floppy disks at the costs of DFL. 65 each.

NA/69 Analyzing relative factor inputs of Dutch exports: An application of the 1990 Social Accounting Matrix for the Netherlands (forthcoming), Reininga, Ted (1994).
In this paper the validity of neoclassical trade theory for explaining Dutch international trade patterns is studied. The analysis is carried out with the use of a Social Accounting Matrix for The Netherlands. This study corroborates the outcome of other recent analysis in this field: classical trade theory offers a better starting-point to understand Dutch trade patterns than neoclassical trade theory. Moreover, these recent studies point to the increasing relevance of insights derived from modern trade theory. The results presented here seem to support this point of view.

NA/70 SESAME for the evaluation of economic development and social change, Keuning, Steven J. (1994).
This paper elaborates on the concept of a System of Economic and Social Accounting Matrices and Extensions, or SESAME for short. The SESAME-concept serves to meet the criticism that conventional national accounts take a too limited view at social, environmental and economic development. SESAME details the monetary accounts and couples non-monetary information in an integral system approach. SESAME is meant as a synthesis of national accounts and the social indicators approach.

NA/71 New revision policies for the Dutch National Accounts, Den Bakker, Gert P., Jan de Gijt and Robert A.M. van Rooijen (1994).
This paper presents the (new) revision policy for the Dutch National Accounts. In the past, several major revisions of national accounting data have been carried out in the Netherlands. In the course of time, the policy has changed several times. Recently, the aim has become to publish relatively long time-series shortly after the publication of the revised benchmark year data.

NA/72 Labour force data in a National Accounting framework, Den Bakker, Gert P. and Jan de Gijt (1994).
This paper deals with the Dutch interwar labour force data. Starting with census data the estimation of the working and non-working labour force by industry and by occupational type is described and the results are discussed. The data have been estimated within the national accounts framework. It is the first time that labour market figures at a meso-level have been estimated which are linked to other national accounting figures.

NA/73 Integrated estimates of productivity and terms-of-trade changes from a Social Accounting Matrix at constant prices, Keuning, Steven J. 1994).
This paper demonstrates that measures of real income change for the total economy can best be derived from real income changes per subsector. For this purpose a Social Accounting Matrix (SAM) at constant prices has been compiled. By breaking down value added at constant prices into constant price estimates for each primary input category, productivity changes by industry can be estimated as an integral part of the regular national accounts compilation. The national total trading gain or loss from a change in the terms of trade is as well allocated to subsectors, thus embedding the estimation of this macro-measure into a meso-consistency framework. These ideas have been applied in a case-study for Indonesia.

NA/74 Taking the environment into account: The Netherlands NAMEA's for 1989, 1990 and 1991, De Haan, Mark and Steven Keuning (1995).
The National Accounting Matrix including Environmental Accounts (NAMEA) contains figures on environmental burdens in relation to economic developments as reflected in the National accounts. NAMEA's for the Netherlands in 1989, 1990 and 1991 have now been completed. They include a more detailed industrial classification and a series of environment taxes and levies, plus environmental protection expenditures by industry and households. Further, the depletion of two important mineral resources in the Netherlands is now incorporated in the NAMEA's.

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