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THE INTERACTION BETWEEN NATIONAL ACCOUNTS AND SOCIO-ECONOMIC POLICY

WITH SPECIAL REFERENCE TO THE NETHERLANDS

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Summary

This paper addresses the interaction between national accounts and socio-economic policy formulation. In the Netherlands, this interaction mainly occurs through the widespread application of formal economic modelling. Lately, however, the domestic use of national accounts figures swells because of their growing relevance to policy-making at the international level and because the Netherlands' national accounts increasingly incorporate all kinds of social and environmental data.

This increasing use of national accounts in socio-economic policy formulation coincides with a closer scrutiny of the scope, definition and compilation methods of the accounts. In particular, users ask two fundamental questions:

1. do the national accounts give an adequate description of economic reality?
2. is it possible to measure welfare with the national accounts?

The paper suggests a number of amendments to the 1993 SNA, so that the national accounts of the 21st century will yield an affirmative answer to these questions. The essence of the amendments is that the core system is extended with non-monetary accounts and summary indicators on welfare attributes for which no price was paid. This should coincide with a harmonization of business accounting and national accounts guidelines, so that the national accounts are better tailored towards a description of economic reality at the micro level.

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1. Introduction

In a recent conference dealing with long-term perspectives on international statistics, the then Minister of Economic Affairs in the Netherlands and two co-authors presented a paper on the requirements of policy makers [Andriessen, Van Sinderen and Bergeijk, 1995]. This paper contains a metaphor in which economic policy is viewed as space travel, in need of fixed numerical guidelines for good navigation. The authors distinguish on the one hand 'earthbound' statistics, for which a reasonably stable demand exists and which are generally accepted, and on the other hand statistical 'comets' and 'shooting stars', which suddenly attract a lot of attention but for which interest fades away almost as fast as it comes up. The authors explicitly rank the national accounts among the former category and remark that "... the system may well be able to survive the next 500 years." (p. 237).

Comforting as this may seem, the authors certainly do not envisage a system that will survive unchanged. In their view, future economic policy will require national accounts which incorporate new issues (i.a. environment, R&D, schooling and the working of markets), and which are more reliable, more detailed, more transparent, and better internationally comparable. In addition, they are in favour of international competition in the compilation of statistics.

In general, one can safely assume that economic policy will continue to require more, coherent statistics, and that concomitantly the national accounts also keep on expanding. This paper will give some further thoughts on the present and future interaction between national accounts and socio-economic policy. In particular, some suggestions will be made so as to increase the usefulness of national accounts for policy-making. At first, the next section reviews the present use of national accounts in the Netherlands.

2. Present Policy Use of National Accounts in the Netherlands

Right from the start of national accounting in the Netherlands, its usefulness for economic policy has been borne in mind (see Den Bakker [1993]). In this regard, the national accounts have performed a dual function. First, the accounts, and particularly the main aggregates, serve to monitor the performance of economic policy. Secondly, the data and the underlying accounting framework feed into econometric models that are used for forecasts and for an economic evaluation of alternative policy proposals. Particularly, the models of the so-called Central Planning Bureau (CPB) exert a fairly unique influence.

In the Netherlands, policy-makers and even political parties make a very intensive use of the results of CPB's model simulations. Haffner and Van Bergeijk [1994] conclude: "... the impact of econometric models on Dutch policymakers is very substantial. ... It is a unique phenomenon indeed that CPB prognoses for employment, income (and its distribution) and the budget deficit play an important role in the election campaigns. Astonishing as this may seem to anyone who has ever built or used economic models, popular trust in the CPB's numerical precision is so great that a predicted difference of a few thousand jobs can become the selling point of an election platform." This conclusion refers to a CPB [1994] analysis of the economic consequences of the election programmes of the five biggest political parties for the 1994 general election. Even the Green Party, after a heavy internal debate about the relevance of an econometric model to the structural reforms they envisaged, did not dare to enter the elections without a stamp of approval from the country's official economic forecast wizards.

In a 1993 article, Verbruggen and Zalm, the then director of this agency (and at present the Dutch Minister of Finance), noted: "Ever since consistent national accounts data were available, the national accounts philosophy has explicitly been incorporated in the CPB models" [Verbruggen and Zalm, 1993: 153]. They continue: "In addition, at the

CPB a lot of energy is spent on making sure that the models can produce the finalised national accounts data for the past. This takes a lot of time, particularly in the case of revisions." However, they also point to an imminent danger of this practice: "In formalising economic theory through mathematical equations, modelbuilders are inclined to abstract from those aspects for which no data are available. ...the restricted data availability may result in a misleading or meaningless model."

In the mid seventies, a new generation of models was developed that incorporated all kinds of variables that were not (yet) available from the national accounts: production capacity, capacity demand for labour, utilization rates, technical progress and creditworthiness. In the eighties, the micro-theoretical foundation of models has become more important. This stimulated the development of an Applied General Equilibrium model, distinguishing 16 types of households and a classification of labour by sex and skill level.

Regarding the national accounts, Verbruggen and Zalm [1993: 161-162] observe: ".. the accounting system has increasingly come to describe the transactions of clearly-defined categories of companies, households and authorities, which is crucial for usefully testing behavioural hypotheses and, therefore, for economic modelling in general ... The development of a 'core' Social Accounting Matrix (SAM) with various satellite tables seems very promising as well. ... If the CBS succeeds in implementing these promising ideas, such as the integration of input-output tables and, for instance, socio-economic accounts, labour accounts, financial accounts, capital stock accounts and environmental accounts within an internally consistent national accounts framework (in prices and volumes), then the process of divergence between the national accounts and economic modelling at the CPB could change into a process of convergence ..."

Perhaps, this renewed trend towards convergence between national accounts and economic policy modelling is most clearly demonstrated in a

very recent letter of the Netherlands government to the Parliament, stating that "... in the regular medium-term scenarios, the CPB will present, more systematically than thus far, ... as well environmental indicators." [Tweede Kamer, 1996]. The same letter describes the development of the NAMEA, the framework for integrated economic and environmental accounts and indicators, at Statistics Netherlands (cf. Keuning [1996b], Keuning and de Haan [1996]). The above statement nicely demonstrates why the NAMEA is considered of use to policy-makers: it yields both relevant aggregate indicators and an accounting framework for use in modelling and policy analyses. In fact, this dual function is the time-honoured 'unique selling point' of the national accounts in general.

Another trend is the growing need for internationally comparable figures. This also enhances the use of national accounts, as they are compiled according to a global standard, the System of National Accounts (SNA) [United Nations et al., 1993]. Particularly within the European Union, important policy decisions are based on national accounts data; think only of the admission criteria (government deficit and debt) to the European Monetary Union. Interestingly, this also has repercussions on national economic policy in the Netherlands. For instance, for some time past the short-term forecasts on the government deficit include estimates according to the national accounts definition, whereas longer ago the Ministry of Finance just applied its own definition. In addition, the official State balance sheet is now compiled according to the 1995 European System of integrated national and regional Accounts (ESA) [Eurostat, 1996].

This increasing use of national accounts aggregates for policy making entails that these estimates are more and more subject to scrutiny. In itself this is a welcome development: more interest for the compilation methods from various angles can only lead to a further quality improvement, especially if these parties have conflicting interests. However, it also means that the underlying concepts of the national

accounts come under siege. On the one hand some advocate that, since National Income is often (wrongly) equated with national welfare, this figure should be replaced or supplemented with a single, 'better' welfare indicator, like the so-called Green National Income. On the other hand, users increasingly worry about intransparent, analytical constructs in the present accounts, such as the imputed rent for owner-occupied dwellings and the proposed allocation of financial intermediation services indirectly measured (the notorious 'FISIM') as an intermediate 'use' of various industries.

I think that the national accounts should be able to cope with these and other new challenges, provided that some adjustments are made. This is elaborated in the next section of this paper.

3. Adapting the National Accounts to the Policy Demands of the Next Century

It is always hazardous to look more than a year ahead and to imagine how the present-day national accounts should be adapted or extended, in order to cope with the policy demands of, say, the turn of the century and after. However, at the same time, the development of new aggregate time-series requires many years, especially if new source data are also needed and if worldwide agreement on scope and definition of the underlying variables must be reached. For that reason, it is attempted below to describe some medium-term challenges and to outline the directions for research into a solution.

When discussing the future of national accounts, two main, interrelated issues often come up:

1. Do the national accounts adequately describe economic reality?
2. Is it possible to measure welfare with the national accounts?

3.1. Do the national accounts adequately describe economic reality?

3.1.1 Micro-macro linkage

To a larger extent than its predecessors, the 1993 SNA provides an 'institutional' description of the economy. This means that the system is not designed with a particular type of analysis in mind, but that it is meant to reflect the economic actions of 'real-world' actors, such as households, corporations and the government. Yet, the introductory chapter also states, without further justification: "The accounting conventions and valuation methods used at a micro level typically differ from those required by the System." (p. 12). This statement seems to suggest that the national accounts typically refrain from describing everyday economic reality. Fortunately, that is not the case. For instance, both in real world transactions and in the national accounts,

the current exchange value ('market price') is widely used. Anyway, the national accounts do not pretend to measure utility.

Yet, according to the SNA (para 6.85), (almost) all goods and services produced for own final use should be valued at the (basic) prices at which they could be sold if offered for sale on the market. This includes, inter alia, home-grown vegetables, home-knitted sweaters, and the services of owner-occupied dwellings. In fact, this 'opportunity cost' pricing is inconsistent with the valuation rules in the rest of the system, for two reasons.

First, if all own-consumed goods and services had been marketed, both the prices and the consumed quantities of these (and other) products may have been different, so that the economic consequences can only be estimated with a formal model. Particularly, this applies to a situation where the budget share of the product concerned is substantial while a large part of total consumption is own-produced (e.g. housing services). Secondly, whereas the opportunity cost of a subsidized surgical treatment is not included in the macro-economic aggregates, it should also not be attempted to estimate the opportunity cost of eating home-grown vegetables. In reality, only the actual cost of a good or service can be quantified in monetary terms; in case of a purchase, this cost equals the purchase price, and in case of own production, this cost equals the production outlays.

Such a valuation rule would also remedy the anomalous treatment of housekeeping services and such in the present SNA. Contrary to other goods and services, these services are at present not viewed as output within the System. The justification for this treatment is not quite convincing (cf. para.s 6.21 and 6.22). In my view, these services are output, just like the result of all other economic activities (cf. para.s 6.15 and 6.16 of the SNA). However, as these services are not sold and as their production involves no outlays, other than the purchase of some goods (food, detergents, electrical apparatus, etc.)

which have already been included in household consumption expenditure, the net value added of this activity is equal to zero (if the durables involved were not bought on credit). Analogously, Net Domestic Product is not affected by this new treatment, provided that the annual consumption of the stock of durables roughly equals the durables' purchase value in the same year. Needless to say, though, that these services do affect welfare and should be incorporated in a comprehensive national accounting system. This is elaborated in section 3.2 below.

Valuing all output produced for own final use at its production costs also implies that the circuitous and unreliable procedure to estimate the value of owner-occupied housing services can be replaced by just adding up the actual costs to the owner. Of course, these costs include the 'normal' reduction in the sales value of the house during the reference year. These costs also include the interest on a possible mortgage loan, as a remuneration for a financial capital input into production (cf. Keuning [1996a], Keuning and Reininga [1996]). In general, all interest payments, including the FISIM, are part of production costs, and should be shown as a separate value-added category. This also applies to government production (except for interest payments on a very exceptional debt from the past, such as a war debt).[1]

Strengthening the link between national accounts and business accounting is recommendable in my view, not only for the sake of the unity of economic science, but also for a better reflection of economic reality in the national accounts. Economic reality occurs at the micro level. Most economic policy ultimately affects the micro level. The national accounts should reflect this reality as good as possible, if only to enhance its usefulness for economic policy purposes. On the other hand, business accounting practices might benefit from more harmonization, if only to increase the transparancy of the stock

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1. Note that if the government leases capital goods, the financial input costs are also (implicitly) included in its (operational lease) intermediate input costs, and thus in government output.

markets.

Finally, three more practical reasons for strengthening the micro-macro link can be mentioned. First, estimating opportunity cost prices for items such as own-consumed production of vegetables and flowers from (allotment) gardens and wages in kind (subsidized canteen meals and free parking), absorbs a disproportionate amount of statistical resources. This is certainly not matched by the statistical benefits.

Secondly, using micro-concepts in the national accounts as much as possible considerably facilitates the linkage of source statistics and the national accounts. In turn, that might improve the coverage, relevance and reliability of the source statistics, while at the same time the level of detail and the flexibility of the national accounts increase. Imagine the opportunities if the wealth of information in source statistics can be explored within a consistent, broad information system, tailor-made, and with relatively little effort.

Thirdly, in virtually all countries the respondent burden is a hot issue. This burden is aggravated by asking enterprises for data that are not directly available in their own administrations. When Electronic Data Interchange (EDI) is applied for capturing the information, the definition of the variables obtained will anyhow be in accordance with the business administrations' concepts. Converting this information to variables with another definition must then be done within statistical offices. This activity will be quite costly and will always yield more or less arbitrary results, as it is not based on directly observable facts.

3.1.2 Globalization

Globalization can be characterized by the increasing geographical divergence of various economic processes which used to occur within the

same country, such as:

1. production and consumption,
2. investment and production, and
3. financing and investment.

Especially the delinking of international commodity and money flows has led to an increasing interdependency of national economic policies. At the same time, deregulation has typically had a detrimental effect on the quality and quantity of source data for the national accounts. Without doubt, this trend has put a greater burden on the national accountants to provide a reliable overview of the functioning of the national economy.

In this respect, some predict the imminent replacement of national accounts by European or even worldwide accounts. Let us not forget, though, that as long as national governments exist that are primarily concerned with the welfare of their population, there will be a national economic policy demanding national accounts. In fact, many policy makers now turn to the (extended) national accounts to obtain more insight into the strengths and weaknesses of the economy. Moreover, for some time to come, the most important fiscal, social, and environmental policy measures are determined at the national level. Even in Europe, some more water may flow under the bridges before abandonment of the 'subsidiarity' principle is considered a realistic option.

Nevertheless, it goes without saying that a growing demand exists for a) internationally comparable data, b) supra-national accounts, and c) more insights into economic linkages among countries. For all these data sets, the intended worldwide application of the 1993 SNA paves the way. In fact, the very existence of these truely universal guidelines is a major achievement, that perhaps deserves a little more attention among the media and the policy-makers.

In addition, the structure and the classifications of the 1993 SNA will yield a lot more data on international ties than its 1968

predecessor. For instance, reinvested earnings on direct foreign investment will now be shown explicitly. In addition, foreign-controlled enterprises are singled out in the institutional sector classification. For that matter, in the Netherlands' accounts, national enterprises with and without foreign affiliates will also be shown separately.

Next, the complete harmonization between the SNA and the IMF's balance of payments manual - unfortunately, except for the treatment of FISIM (?) - is quite instrumental to a further integration of the national accounts and balance-of-payments statistics. In turn, such an integration is not only efficient, but also enhances the possibility for analyzing international economic linkages (e.g. direct foreign investment).

Finally, it is worthwhile to explore the possibilities to compile e.g. cross-country international trade matrices which are consistent with the (definitive) national accounts of the participating countries. For the first time, such an effort would require international coordination of the compilation of national accounts. The United States and Canada already have some experience in this field, while in the European Union this subject is discussed in the task force on international trade statistics that was recently installed by the so-called GNP-committee.

3.1.3 The flexible services economy

Another crucial test for the policy relevance of the national accounts is its ability to cope with the rapidly growing importance of (flexible) services. This coincides with an increasing attention for 'human capital' as the decisive production factor. In my view, this mega-trend is not sufficiently reflected in the 1993 SNA's central framework. The present core accounts still distinguish only one type of labour (e.g. in the supply and use tables) and do not even distinguish the employed

person as a separate, economically relevant entity. This serious shortcoming is remedied in the Social Accounting Matrix (cf. the SNA's Chapter XX). In general, the integration of disaggregate labour accounts (categorized by e.g. sex, educational level and type of job contract) and national accounts is the most important task ahead once the 1993 SNA has been implemented.

In addition to labour input, the financial capital input into production deserves much more attention than it receives in the 1993 SNA (Keuning, 1996a; Keuning and Reininga, 1996). On the other hand, in a rapidly changing economy, the notion of 'fixed' capital input becomes less important. In fact, the dividing line between intermediate inputs (incl. operational lease of fixed assets) and the consumption of fixed capital becomes increasingly blurred. Perhaps, it is preferable to record the consumption of fixed assets within the intermediate input block (as a delivery of the capital goods producing industry to intermediate demand instead of final demand).

At the same time, the core SAM of the future should contain a different industry classification, taking economic homogeneity (financing structure, input and output markets on which the firm operates) rather than technical homogeneity of the production process as a point of departure. For example, 'branches of multinationals producing fast-moving consumer goods' is probably a more relevant industry than 'manufacture of dairy products' or 'manufacture of soap, detergents and perfumes'. Analogously, some industries are characterized by one or a few very large firms and a large number of small and medium firms. Typically, these two groups of firms operate on very input (capital) and output (consuming) markets. The fact that their output has roughly the same physical characteristics does not warrant their lumping together in a single 'industry'. On the other hand, the present industry classification is often much more detailed than is really needed for macro-/meso-economic analysis. Particularly, this applies to the manufacturing breakdown. Related to this, the definition of the

establishment as a production unit should be reconsidered.

Finally, the measurement of services output itself deserves more attention. In particular, this refers to the estimation of price and volume changes. Again, it is important that for this purpose an economic and not a 'technical' classification of services is applied. For instance, a stratification of lodging services into services provided by hotels, motels and youth hostels may be less relevant than a breakdown of lodging services by quality category (one to five stars) or market segment. In addition, the recording of Research and Development expenditures should be reconsidered (again). Probably, these expenditures are most suitably viewed as work in progress (change in inventories), as long as they have not yet yielded an identifiable economic asset such as a patent (see Bos, Hollanders and Keuning [1994]).

The ideas expressed in this section mean that the monetary national accounts become truely monetary accounts. This means a considerable improvement of the transparancy of the system and of their usefulness for various economic policy purposes, including international taxation. For, countries contribute money to international organizations, not labour time, free housing services or environmental functions. Related to this, the financial strength of a country is determined by its Net National Income in monetary terms. In addition, this emphasis on (monetary) transactions in the accounts also fosters a closer (complete?) link between the consumption concept in the national accounts and in the consumer price index (CPI). In turn, economic policy analysis is greatly served if core economic indicators such as GDP volume change and the CPI change are derived from the same analytical framework.

All the same, it should be avoided that, because of this new orientation of the macro-economic statistics, the relationship between the national accounts and welfare measurement becomes even looser than

at present. Whereas all economic policy ultimately deals with the welfare of the population, this major other challenge for the national accounts of the future is discussed next.

3.2 Is it possible to measure welfare with the national accounts?

The 1993 SNA takes a somewhat ambiguous attitude towards the relevance of GDP and such for the measurement of welfare. A special section on this issue states: "... total welfare depends on many other factors besides the amounts of goods and services consumed." (para. 1.77), but also "The use of one or two aggregates to gauge changes in welfare may be one of the more important uses of the System .." (para. 1.82). In my view, a lot of confusion would be avoided if it is clearly stated that GDP volume change in itself is not a sufficient indicator to measure welfare change.

This is not to say that the national accounts should refrain from the measurement of social welfare. On the contrary, in principle all aspects of welfare should be depicted within the system. Of course, this is a very ambitious objective, so that a flexible approach is required. However, many national statistical systems already collect and publish information on virtually all aspects of welfare. Thus the problem is not so much a lack of information, but a lack of integration of this information within a comprehensive, though flexible statistical information system. This requirement is met by a System of Economic and Social Accounting Matrices and Extensions (SESAME), as sketched in the 1993 SNA (para.s 20.29-20.33) and elaborated in Keuning [1996a], who has built on earlier work of, among others Stone [1986], Pyatt and Round [1985], and Downey and Thorbecke [1992].

In Chapter I of Keuning [1996a], content and purpose of the SESAME are outlined: "A SESAME is a statistical information system in matrix format, from which a set of core economic, environmental and social

macro-indicators is derived. The system is driven, to a large extent, by the kind of information required for monitoring and policy-making at the macro-level. Although it is impossible to capture socio-economic development in a single indicator, it is equally clear that a prime task of national statistical offices is to comprise the countless numbers they collect to a manageable, 'executive' summary. Such a summary typically describes trends in main indicators. At the same time, for analytical purposes a more detailed data framework is required. Obviously, the communication between policy-makers and analysts is optimally served if the core macro-indicators are all derived from an integrated information system such as a SESAME."

Essentially, a SESAME integrates economic, social and environmental accounts and indicators, through a conceptual and numerical linkage of related monetary and non-monetary data. It extends the SAM by integrating related information, in non-monetary units. For instance, compensation of employees by industry and labour category in the SAM is broken down into hours worked and an average hourly wage rate. In turn, these hours worked for payment are related to other time use of the employed persons concerned. Subsequently, time use of the employed persons can be combined with the time use of the other members of the same household (group), to arrive at a comprehensive linkage of (social) time use data and (economic) income figures.

Another example refers to the daily calorie intake, which is an important social indicator in developing countries. This calorie intake can be related to the quantities consumed, which in turn underly the consumption submatrix in the SAM [Keuning, 1996a; section IV.3.4].

Summarizing, the linkages between the monetary accounts and the other accounts in the SESAME are typically established in non-monetary units, such as hours, calories, gigajoules and volume changes. This means that an essentially arbitrary imputation of a hypothetical price to an unpriced flow is avoided. Therefore, a SESAME remains a statistic, and

not the outcome of an (implicit) model.

In the Netherlands, this SESAME system is gradually developed. It started with the compilation of a pilot SAM [Timmerman and Van de Ven, 1994] and a National Accounting Matrix including Environmental Accounts (NAMEA) [De Haan and Keuning, 1996; Keuning and De Haan, 1996]. In this NAMEA-framework, environmental accounts and summary indicators in physical units are linked to a conventional national accounts matrix. Both the SAM and the NAMEA are now an integral part of the annual national accounts in the Netherlands, and particularly the NAMEA is frequently used for economic policy purposes in the Netherlands (cf. Keuning, 1996b for a review).

A recent joint letter of the Minister of Economic Affairs and the Minister of Housing, Physical Planning and Environment to the Parliament reports on this as follows: "At the macro-level as well [as at the micro-level] (national) income cannot be equated with (national) welfare. The development of welfare is determined by a large number of factors. Besides the development of national income, changes in environmental functions, distributional aspects (income distribution), employment and the health situation all play a role. Therefore, it is important to have the disposal of information systems that provide an integrated view of the interrelations among various welfare attributes. Statistics Netherlands has already started the design of an integrated information system, by means of environmental and labour accounts linked to the national accounts (NAMEA and SAM, respectively). Eventually, this will result in an extensive System of Economic and Social Accounting Matrices and Extensions (SESAME)." [Tweede Kamer, 1996].

Concerning an adjusted national income estimate, the Ministers state: "The Green National Income does not exist in reality and therefore requires model calculations. ... As the results of such calculations are quite sensitive to the assumptions made, the model specification and the norms for environmental protection, many variants of a Green National

Income can be computed. It is not expected that such computations yield a single, indisputable figure. On present showing, it is unclear whether the large research efforts needed for a recalculation of the past are outweighted by the practical benefits. In our view, it is more interesting and more workable to provide a more prospective and policy relevant answer to the demand for a Green National Income. This can be done by investigating which level of national income can be attained in the medium or long term, if the expected environmental pressure drops as a consequence of politically determined environmental norms." [Tweede Kamer, 1996].

Meanwhile, the NAMEA and the SAM have also been combined in a single framework [Keuning and Timmerman, 1995]. Present development of the Netherlands' SESAME focuses on linking the SAM to socio-demographic accounts and on incorporating more detailed accounts on social benefits and its beneficiaries. In addition, work is continuing on the inclusion of time use accounts (cf. Kazemier and Exel, 1992) and a R&D-module [Bos, Hollanders and Keuning, 1994]. Finally, from 1996 onwards Statistics Netherlands will publish an annual review of the performance of the Dutch economy, including social and environmental developments. The very first table of this publication shows the changes of the 'core' economic, social and environmental indicators, while the underlying trends are highlighted in the remainder of the book. For the time being, though, the data underlying some of the core social indicators in the first table (life expectancy, health situation, criminality) have not yet been integrated into the SESAME.

Compilation of a SESAME ensures that unpriced welfare attributes are not overlooked in the national accounts and in the subsequent economic policy analyses. This obviates the need to insert such attributes as a kind of cuckoos in the GDP nest. As a consequence, in the accounts themselves a tighter micro-macro link can be maintained, i.a. by valuing all output produced for own final use at its production costs (cf. subsection 3.1.1. above). This valuation principle yields the most

meaningful and transparent measure of net economic value at current prices, in my view.

Concerning the aggregate measure of volume change in the economy, matters are far more complicated. In the first instance, one might imagine that for that purpose the weights of unpriced commodities are based on some sort of opportunity costs. However, this is only a very partial and even biased solution to the more general problem that actual prices (including 'zero' prices) are often not the 'right' prices, from a social welfare point of view. For priced commodities as well, the deviation between actual prices and 'right' prices can be quite substantial, due to the existence of consumer surpluses, price distortions (e.g. subsidies, rationing), suboptimal income and wealth distributions, and differences between individual and social welfare (illegal transactions, 'conspicuous' consumption). It is anyhow questionable whether 'correct', objective weights can be computed by a statistical office.

In these circumstances, national statistical institutes may adopt the following strategy:

1. Accept that anyhow welfare change cannot be monitored on the basis of a single indicator (such as GDP volume change).
2. Try to design a list of core welfare indicators which a) each shed light on an important aspect of welfare, and b) are based on observable facts and are aggregated on the basis of undisputed weights (e.g. total productive time use, pressure indicators by environmental problem, average number of years of schooling).
3. Use market prices (and total production outlays for government services and own-consumed production) as weights for computing GDP volume change.
4. Communicate more explicitly to the users and to the public at large that GDP volume change yields only a very partial insight into welfare change.

At the same time, it might be a worthwhile economic research project to

construct a model that simulates the functioning of an economy in which all goods and services are priced at their opportunity costs. Of course, in such a model the behavioural reactions to such drastic price changes ought to be incorporated.

4. Conclusions and Recommendations

Right from the start of national accounting, a close link with the demands of socio-economic policy analysis has existed. The principal strength of national accounts is probably that they provide both core indicators for a quick glance at socio-economic development and an underlying analytical framework. In this way, all prospective policy analyses yield alternative values for the same variables as are used for monitoring the past.

The policy relevance of national accounts has been enhanced by the existence of commonly accepted international guidelines for their compilation. The 1993 SNA is a major step forward in this regard, not only because of its worldwide implementation, but also because of its broadened scope, including, in particular, the relations between stock and flow accounts and full-fledged balance sheets.

In the Netherlands, the official government models exert relatively much influence on the design of socio-economic policy. At present, the development of the Dutch national accounts framework (application of Social Accounting Matrix and the environmental module NAMEA) and the development of the modelling framework (application of Applied General Equilibrium models and the incorporation of environmental issues) move in parallel. In addition, the extended Dutch national accounts are now used for a broader range of policy analyses than before. The main advantage of these extended national accounts is that they provide the link between all kinds of social, economic and environmental objectives and the 'hard-core' financial restrictions. Interestingly, the availability of this broad information system has also triggered the interest of some 'subject matter' departments within the government (e.g. Environment, Housing); they view it as a framework for their negotiations with the Finance Ministry. Finally, the growing influence of the European Union promotes the use of internationally harmonized (national accounts) data in all kinds of (national) policy simulations.

This augmented use of national accounts gradually leads to more interest for the underlying concepts. For instance, it is questioned whether present-day national accounts are sufficiently suited to shed light on the mega-trends of globalization and the transformation into a flexible service economy. Above, it has been argued that globalization may not require many new concepts, apart from the ones that have already been incorporated in the 1993 SNA but are not yet implemented. Rather, it calls for more coordination when compiling the accounts. At the national level, this refers to the attunement of balance-of-payments statistics and the national accounts. At the international level, the organizational feasibility of reconciling nationally deviating estimates on bilateral trade flows should be investigated.

The trend towards a flexible service economy and the concomitant shift to human capital as the prime determinant of competitiveness requires, at the very least, an integration of detailed labour accounts (by sex, by educational level, by type of job contract, etc.) and the national accounts. Moreover, the technical, engineering characteristics of production processes become less and less relevant. As outlined in subsection 3.1.2 above, this requires a new concept of capital input in production, a different industry classification and another definition of the establishment unit.

Finally, policy makers are keen that the results are not sensitive to all kinds of quite arbitrary imputations. In general, the transparency of the accounting system is sometimes questioned (in case of e.g. the proposals for allocating FISIM, the imputed rent for owner-occupied housing, and the estimation method for the consumption of fixed capital). On the other hand, time and again a demand is expressed for incorporating welfare aspects that are thus far not covered in the system (environmental degradation, productive time use within the household, etc.).

The best way to meet these apparently conflicting demands is a two-

tier strategy:

1. establish a tighter micro-macro link in the monetary accounts, and
2. extend the system with non-monetary accounts and indicators, to arrive at a full-fledged System of Economic and Social Accounting Matrices and Extensions (SESAME).

With regard to the former objective, more attention should be given to the harmonization of business accounting regulations (e.g. at the European level) and national accounts guidelines such as the SNA and the European System of Accounts (ESA '95). Concomitantly, the present half-hearted attempt at comprehensive welfare measurement by means of a single aggregate (GDP volume change) should be abandoned. National statistical institutes should communicate more explicitly that only a set of indicators can cover the most important welfare aspects. Further aggregation always requires a political judgment.

Compilation of a SESAME essentially boils down to making a better use, through integration, of data that are already collected by statistical offices. This will produce information that is a) more relevant (complete coverage of all fields; interrelations between social, economic and environmental developments can be better monitored and analyzed), b) more reliable (more logical identities have been checked) and c) more efficiently compiled (integration requires coordination, and coordination promotes efficiency). Flexibility is enhanced by enabling custom-made breakdowns of (parts of) the standard SESAME. Besides, integrating statistics in an information system improves both the quality and the level of detail of very timely, preliminary estimates. This is demonstrated in the Netherlands by the methodology for the quarterly accounts and the quarterly flash estimates [Algera and Janssen, 1991; Ouddeken and Zijlmans, 1991].

Another way to express this possible future orientation of the national accounts is by saying that the monetary national accounts will deal with the (direct) costs. Contrary to benefits, these can namely be

quantified in monetary terms. Benefits can only be expressed in (a range of) non-monetary units. Compilation of an extended national accounting system (SESAME) then serves to provide socio-economic policy with a framework for monitoring and analyzing the benefits and the externalities.

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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).
This paper presents a proposal for the synoptic structure of the next SNA. This system is easier to explain than 1986 SNA; it provides a complete integration of input-output data and the income distribution data; it is more flexible and greatly facilitates micro-macro linkage.

NA/15 Features of the hidden economy in the Netherlands, Van Eck, R. and B. Kazemier (1986).
This paper presents the results of extensive and rigorous survey research into the black labour market in the Netherlands. It reveals the quantitative relevance of the hidden economy and gives detailed information on its structure.

NA/16 Uncovering hidden income distributions: the Dutch approach, Van Bochove, C.A. (1987).
The three modules in this paper constitute a system of Socio-Economic Accounts that provides a complete description of the distribution of income, both primary, secondary, tertiary and informal, as well as a complete description of the distribution of consumption and saving.

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 of the main problems associated with the compilation of long-term series. It is the purpose of this paper to make the historical series accessible to non-Dutch readers.

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).
The issue of the proper way to account for the consequences of crisis and disaster is best brought into focus by studying a practical case. In this paper the damage caused by the second world war in the Netherlands is used as an example. Constant wealth national income is introduced as an alternative income concept.

NA/20 **The micro-meso-macro linkage for business in an SNA-compatible system of economic statistics**, Van Bochove, C.A. (1987).
The new system of national accounts will be a fully integrated meso system: not only will each process be described at the meso level, but the linkages between the processes will also be shown at the meso level. A central role is played by the three-dimensional generation of value added matrix.

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 to form a basis for the classification of these units. The system is constructed in such a way that the sector classification of the SNA and the ESA can be derived from it.

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 employment 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 1991 Social Accounting Matrix for the Netherlands**, Cörvers, Frank and Ted Reininga (1996).
The paper analyses the human and physical capital content of Dutch trade and tests the validity of the controversial Heckscher-Ohlin-Vanek (HOV) theorem of international trade for the Netherlands. The factor content analysis shows that the Netherlands is abundant in machinery and equipment and low-skilled labour and is poor in intermediate and high-skilled labour and construction. These findings are in line with the true Dutch factor endowments. This underlines the relevance of the HOV theorem in the Dutch case.

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.

NA/75 **Economic theory and national accounting**, Bos, Frits (1995).
This paper describes the relationship between economic theory and national accounting. This relationship is often misunderstood, by economic theorists and national accountants alike. Attention is drawn to the consistency required in a national accounting system, to national accounts figures as a transformation of primary data and to the fundamentally different valuation principles employed in economic theory and national accounting (forward looking and analytic versus backward looking and descriptive). The gap between economic theory and national accounting can only be bridged by satellite accounts, as in these accounts consistency with the overall system and valuation at current exchange value are not strictly required.

NA/76 **An information-system for economic, environmental and social statistics**, Keuning, Steven J. and Jolanda G. Timmerman (1995).
The 1993 SNA mentions that a SAM can also be extended to deal with environmental issues. This entails the integration of a SAM and a NAMEA into a SAMEA (Social Accounting Matrix including Environmental Accounts), a further extension into the direction of a so-called SESAME (System of Economic and Social Accounting Matrices and Extensions). This paper shows how environmental data and environmental indicators can be integrated into such a system. A Dutch case-study shows the interrelations between e.g. the employment of various types of workers (by sex/educational level) and the environmental problems caused by the activities in which they are employed. Moreover, this pollution is also allocated to the subsectors that receive value added. This enables a comparison with the consumption-based pollution by subsector. The SAMEA yields a framework for an integrated analysis and modelling of social, economic and environmental issues.

NA/77 **Material flows, energy use and the structure of the economy**, Konijn, Paul J.A., Sake de Boer and Jan van Dalen (1995).
Many environmental problems are connected to production and use of materials and energy. It would therefore be desirable to have an information system that gives consistent, complete and detailed information on material and energy flows. Such a system would even be more useful if it could be connected directly to economic data. This paper presents such a system. Based on the foundation laid by the national accounts the authors construct a system for the analysis of flows of materials and energy through the economy. In this paper the proposed system is illustrated with an application to the flows of iron/steel and energy. An input-output table is presented that describes the production processes in the ferrous metal branch entirely in physical units. Subsequently, steel contents of final products are calculated, and an analysis is made of the consequences of a new technology in the basic steel industry on total energy use in the economy.

NA/78 **Calendar effects on quarterly GDP-growth rates**, Reininga, Ted K. and Brugt Kazemier (1996).
Since 1986 Statistics Netherlands publishes Quarterly National Accounts. The earliest estimates of quarterly GDP, the so-called flash estimates, are published some seven weeks after the reference quarter. In this paper we examine a new, faster flash estimate, some three to four weeks earlier than its original counterpart. The gain is made by using a simple regression technique and incomplete data. To compensate for the lack of data, information on the number of working-days and shopping-days was added to the regression. It turns out that these calendar-aspects significantly affect GDP-growth: 0.30%-points extra GDP-growth for one extra working-day. One extra shopping-day accounts for about 0.17%-points extra GDP-growth.

NA/79 **The NAMEA experience. An interim evaluation of the Netherlands' integrated accounts and indicators for the environment and the economy**, Keuning, Steven J. (1996).
The national accounts publication in the Netherlands contains not only the conventional economic accounts and indicators, but also an integrated system of environmental and economic accounts, the NAMEA (National Accounting Matrix including Environmental Accounts). This paper reports on the present status of the NAMEA-approach and gives a concise summary of this approach. It reviews the present applications of this framework in the Netherlands and, finally, a comparison with the SEEA is made and various common misunderstandings regarding Green National Income are set out.

NA/80 **What's in a NAMEA? Recent results of the NAMEA-approach to environmental accounting**, Keuning, Steven J. and Mark de Haan (1996).
The National Accounting Matrix including Environmental Accounts (NAMEA) shows environmental pressures in physical units that are consistent with the monetary figures in the national accounts. This paper introduces the NAMEA-concept, provides some illustrative analyses of the recently cpmpleted NAMEA time-series, and demonstrates that social accounts and social indicators can easily be intgrated. This results in a fairly broad, multi-purpose statistical information system.

NA/81 **Balance sheet valuation: produced intangible assets and non-produced assets**, Pommée, Marcel and Willem Baris (1996).
This paper deals with the estimation of opening and closing stocks of produced intangible assets such as mineral exploration, computer software and artistic originals and non-produced assets such as land, subsoil assets, patented entities and purchased goodwill. The first section elaborates on the main conceptual issues related to the compilation of stock data such as the asset boundary, the relation between flows and stocks and principles of valuation. The following sections discuss each of the asset categories in detail.

NA/82 Micro-meso-macro linkage for labour in The Netherlands, Leunis, Wim P. and Jolanda G. Timmerman (1996).
This paper describes recent developments in the area of labour market statistics and shows the advantages of integrating these data in the system of Labour accounts and in Social Accounting Matrices. The benefits of such integrated information surpasses the sum of the benefits of various source data. A subsequent effort to adjust the micro data and aggregate figures increases the possible uses of statistics even further.

NA/83 The interaction between national accounts and socio-economic policy, Keuning, Steven J. (1996).
This paper addresses the interaction between national accounts and socio-economic policy formulation. In the Netherlands, this interaction mainly occurs through the widespread application of formal economic modelling. Lately, however, the domestic use of national accounts figures swells because of their growing relevance to policy-making and because the Netherlands' national accounts incorporate all kinds of social and environmental data.

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