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THE REGISTRATION OF PROCESSING IN SUPPLY AND USE TABLES AND INPUT-OUTPUT TABLES

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*) This paper draws on reports written as a basis for discussion in the framework of the revision of the Dutch National Accounts which was finished in 1992. It was first presented as a contribution to the discussions on statistics on services in the Voorburg group in Ottawa in 1989. It was recently revised.

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Abstract

The way processing is recorded in statistics has important implications for the picture these provide of the economy. It determines for instance the representation of the production structure by means of input-output type tables and the depiction of international flows in Foreign Trade Statistics and the Balance of Payments.

In the course of a revision of the Dutch National Accounts the recording of processing was discussed again. This paper presents the main arguments in this discussion. These draw on the Dutch situation but may have some more general meaning as well. The paper focuses on the input-output framework and the statistical sources relevant in that respect.

The arguments primarily regard the effects of the recording of processing on input-output type tables (viz. Supply and Use Tables) and input-output coefficients, but some other points of view have also been taken into account; viz.: links with basic statistics and international guidelines.

Contents

1 Introduction.

There is a longstanding debate about whether processing abroad should be recorded gross or net. This issue is often linked to the question whether processing should be regarded as production of goods or production of services; gross recording would reflect the first point of view and net recording the latter.

Choices in this respect directly influence the way the economy is described in the National Accounts, especially the description of the production process by means of input-output type tables. The main focus of this paper is the most sensible recording of processing in this framework.

National Accounts shouldn't be seen in isolation. They draw on many statistics which, from the point of view of the national accountant, can be seen as basic statistics but which often serve a specific information need in their own right. The link with these sources is of interest to many users. In the Netherlands, relevant statistics are the ones on production by industry (the so-called *Produktie Statistieken*) and the Foreign Trade Statistics. The Balance of Payments also plays a role but more indirectly. This paper reviews whether the proposals made for the recording of processing in the Dutch National Accounts line up with present recording in the Dutch basic statistics without questioning the latter as such. Although the compilation of statistics varies from country to country, the description of the Dutch situation and of some problems involved may serve as an illustration that is of general interest[1].

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1. This paper draws on reports written as a basis for discussion in the framework of the revision of the Dutch National Accounts which was finished in 1992, notably by De Boer, Wind, Ypma, Takema and Baart. These reports have been written in Dutch and are un-published, therefore no specific references are given.

2 Choice of recording

2.1 Concepts and alternatives

The specific use of the word *processing* we will consider in this paper refers to the situation in which one party (the client) owning a certain good commissions a specific treatment of that good to another party (the processor) involving, to a greater or lesser extent, a transformation of the good and an increase of its value. Characteristically, the good remains in the possession of the client. With *a good* we mean in this context a variety of products ranging from raw materials to finished products.

Parties or countries can participate actively or passively in processing arrangements. A company is said to perform active processing (and thus is referred to as an active processor) when it processes goods for other parties. These latter parties then are involved in processing passively, they are referred to as passive processors. This can happen within an economy, but also across the border. The latter is often referred to as *processing to order abroad*. When seen from the point of view of the Dutch economy, active processing to order abroad means that a foreign client has his goods processed in the Netherlands (e.g. by oil refineries); we speak of passive processing when Dutch clients have there goods processed abroad (e.g. sewing of garments). In these cases, one might speak of temporary imports and exports respectively. Whether this should be recorded as such in economic statistics is the very subject of this paper.

Processing thus can be seen as a production process and, when parties in different countries are involved, as international trade. How processing is recorded in statistics therefore has effects on the statistics describing both these phenomena: statistics on the production by industries and input-output type tables on the one hand and Foreign Trade Statistics and Balance of Payments on the other. As mentioned before, the basic choice to be made in this respect is between gross and net recording.

For the Foreign Trade Statistics gross recording means that for passive transactions the value of the goods to be processed is included as exports and the processed goods as imports. For active processing gross recording means that the value of the goods to be processed is recorded as imports and the value of the processed goods as exports. Applying net recording, for passive processing only the payment made for processing (imports) and in active processing only the payment received (exports) are booked.

For the description of the production process gross recording of processing means that the value of the goods to be processed adds to the production value of the passive party and to the value of the intermediate consumption of the active party. Furthermore it means that the value of the processed goods are included in the production value of the active party and in the value of the intermediate consumption of the passive party. Net recording means that the value of the goods to be processed is not included in the intermediate consumption of the active party nor in its production value. For the passive party only the actual processing by the active party (of course net of the value of the goods processed) is entered as intermediate consumption.

Thus, net recording of processing makes it look similar to a service affecting an existing good, for instance repairing a car. It makes no sense, though, to say that if one chooses net recording this implies that processing is to be seen as a service. Up to now, no single criterion or set of criteria has come up which is generally accepted to distinguish goods from services and it is even doubtful whether statisticians should try to do so. Still, if one wants to, more substantial criteria are available than the choice of net or gross recording, like the degree in which the goods are transformed, the personal contact between parties etcetera.

Processing covers a wide range of activities like painting cloth, refining oil, manufacturing clothes, putting chairs in airplanes, spinning wool, etcetera. Thus, a great variety of production processes can be observed, differing in nature and extent of the transformation process. With respect to the latter it is important to distinguish

between processing as one stage in the production of a commodity or as a complete production process. This distinction is particularly relevant for the choices to be made for the recording of processing in the National Accounts and especially input-output type tables as will appear from the next section. Input-output type tables describe on a macro- and meso-economic level the production structure of an economy and serve to facilitate analyses of the production. We will start with processing as a stage of a production process because in the Netherlands this is the most general case.

2.2 Processing as a small part of a production process

In the Netherlands the most general situation in processing is that of a company (the client) buying raw materials, processing them to some extent first and then sending them to another company (the active processor) for further processing. The latter typically consists of a very specific job, like painting or coating. The resulting products are subsequently either processed further or sold. In general, no change of ownership takes places, so money flows are restricted to the payments for the processing.

In these cases, from a macro- or meso-economic point of view gross recording will result in a particularly obscure description of the production process. First of all, gross recording leads to three entries for intermediate consumption: two for the party that commissions and one for the processing company. Intermediate consumption for the party that commissions is recorded first when the purchased raw materials are booked. Upon return the processed goods are again recorded as intermediate consumption. For production there is a similar effect: for the client the production is made up of goods to be processed and of final products. For the processing company the production equals the value of the processed goods. Thus, production as well as intermediate consumption is grossed up. In such a situation, an interpretation of input/output coefficients is difficult to make.

To illustrate this, the following example may serve. Consider a closed economy in which the basic metallurgic industry is predominant.

This industry is made up of two companies A and B, both performing the same production process: they produce iron pipes, sheets, bars etc. Because of the nasty climate all these products can only be used when coated; both companies perform this part of the production process also. In a set of Supply and Use Tables this economy might look like this:

Example 1. A closed economy without processing

SUPPLY TABLE

	met. ind. A	met. ind. B	other ind.	total
pipes	40	10	-	50
sheet	30	40	-	70
bars	30	50	-	80
other prod.	-	-	820	820
sub total	100	100	820	1020

USE TABLE

	met. ind. A	met. ind. B	other ind.	fin. cons.	total
pipes	-	-	50	-	50
sheets	-	-	70	-	70
bars	-	-	80	-	80
other prod.	20	20	80	700	820
sub total	20	20	280	700	1020
val. add.	80	80	540	-	700
total	100	100	820	700	1720

Now assume company B thinks it will be better off if it has company A perform the coating, itself concentrating on the production of iron products. Of course this reduces its value added, but let us assume that this is compensated by a higher operating surplus. Let us further assume that company A has the same kind of motives. Applying net recording the Supply and Use Tables would look as follows:

Example 2. A closed economy with processing as sub-activity, recorded net

SUPPLY TABLE

	met. ind. A	met. ind. B	other ind.	total
pipes	40	10	-	50
sheets	30	40	-	70
bars	30	50	-	80
coat-ing	10	-	-	10
other prod.	-	-	820	820
sub total	110	100	820	1030

USE TABLE

	met. ind. A	met. ind. B	other ind.	fin. cons.	total
pipes	-	-	50	-	50
sheets	-	-	70	-	70
bars	-	-	80	-	80
coat-ing	-	10	-	-	10
other prod.	25	15	80	700	820
sub total	25	25	280	700	1030
val. add.	85	75	540	-	700
total	110	100	820	700	1730

Resulting coefficients would change slightly. For instance the share

of value added in total costs of company A would change from 80/100 to 85/110. This is quite realistic as company B only commissions a small sub-activity to company A. On the other hand, completely different coefficients would result when gross recording would be applied. The of company A would then change to 85/200 and that of B to 75/190. Next example illustrates gross recording:

Example 3. A closed economy with processing as a sub-activity, recorded gross

SUPPLY TABLE

	met. ind. A	met. ind. B	other ind.	total
pipes	40	18	-	58
sheets	30	75	-	105
bars	30	97	-	127
coated prod.	100	-	-	100
other prod.	-	-	820	820
sub total	200	190	820	1210

USE TABLE

	met. ind. A	met. ind. B	other ind.	fin. cons.	total
pipes	8	-	50	-	58
sheets	35	-	70	-	105
bars	47	-	80	-	127
coated prod.	-	100	-	-	100
other prod.	25	15	80	700	820
sub total	115	115	280	700	1210
val. add.	85	75	540	-	700
total	200	190	820	700	1910

Gross recording would also lead to very disturbing effects for the total of the basic metallurgic industry. The share of value added in total costs would change from 160/200 in the non-specialized situation to 160/390 in gross recording, suggesting a completely different production structure. When net recording would be applied the change would be much more realistic: the resulting share would be 160/210.

When parties in different economies are involved, gross recording not only leads to unrealistic input-output coefficients, but also to unrealistic import and export coefficients. This is especially disturbing for time series because gross recording leads to unrealistic jumps in these coefficients. By way of illustration an example in which we consider again the economy depicted in example 2, but company A now doing the coating for a company in another economy and not for company B. E.g. if the foreign company would commission the coating of 100 units to our economy, gross imports would amount to 90 and gross exports to 100. Value added in this example would of course exceed that of example 2

(with 10 units; 5 units in the metallurgic industry and 5 units in other industries) because the coating is not used as intermediate consumption but exported. A bit compressed, net recording would look like shown in example 4.

Example 4. An open economy with active processing as a sub-activity, recorded net

SUPPLY TABLE

	met. ind.	other ind.	im-ports	total
steel prod.	200	-	-	200
coat-ing	10	-	-	10
other prod.	-	825	-	825
sub total	210	825	-	1035

USE TABLE

	met. ind.	other ind.	fin. cons.	ex-ports	total
steel prod.	-	200	-	-	200
coat-ing	-	-	-	10	10
other prod.	45	80	700	-	825
sub total	45	280	700	10	1035
val. add.	165	545	-	-	710
total	210	825	700	10	1745

Comparing examples 1 and 4 changes appear to be only marginal. This is correct: the levels of activity change only slightly. In fact the only thing that happens is that the production of coating is now exported instead of used domestic. As example 5 shows, gross recording on the contrary would suggest a greatly changed production structure, which is far from realistic. Thus, it can be concluded that a gross recording in such a situation leads to a distorted picture of the economy.

Example 5 An open economy with active processing as a sub-activity, recorded gross.

SUPPLY TABLE

	met. ind.	other ind.	im-ports	total
steel prod.	200	-	90	290
coat-ing	100	-	-	100
other prod.	-	825	-	825
sub total	300	825	90	1215

USE TABLE

	met. ind.	other ind.	fin. cons.	ex-ports	total
steel prod.	90	200	-	-	290
coat-ing	-	-	-	100	100
other prod.	45	80	700	-	825
sub total	135	280	700	100	1215
val. add.	165	545	-	-	710
total	300	825	700	100	1925

In the same way it can be demonstrated that a gross recording of

passive processing in an open economy in such a situation (processing as a sub-activity) gives an unrealistic depiction of the economy as well.

Admittedly, the examples are (over)simplified. Furthermore, one could object that the outcome of the effects of recording depends on the production structure and figures chosen. In our opinion though, the examples are neither unrealistic nor exaggerated. Important elements in this are the assumptions regarding the input/output coefficients, the relative importance of the processing in the total production process and the place of the processing in the production sequence. Simulations suggest that the effects of gross recording are more disturbing the larger the input/output coefficients and the nearer the processing to the end of the production process.

Apart from the ill effects on the description of the production process one can also object against gross recording that it does not follow observable money flows. When the active and passive processing companies belong to the same economy no gross money flows are recorded at all, only the payment made for the processing is recorded in company records. With regard to company bookkeeping the same applies in fact when processing is commissioned abroad. Admittedly, in the Foreign Trade Statistics gross recording is dominant. This however is only occasioned by recording practices: basically flows of goods are recorded for which, just because of custom regulations, a price has to be given as well. On the basis of this, values are imputed; these do not reflect money flows however. Thus, it can be concluded that in general gross recording also has the disadvantage of necessitating imputations for which to a large extent proper values are lacking. Things become even more complicated when respective flows happen in different reporting periods: in these cases financial claims also have to be imputed.

2.3 Processing as a complete production process

Less common but not unimportant is the case in which a company sends raw materials to another company to have them processed to final products. In this case the processing company carries out the same activities as it would if the final products were manufactured on their

own account. From a physical point of view it requires just as much raw materials and auxiliary materials, employing the same kind of capital goods and labor. An important example of this in the Netherlands is the refinement of crude oil commissioned by foreign companies. The choice between net recording and gross recording is more complicated here than in general. Consider the example of an economy with one refinery producing only on own account:

Example 6. An open economy without processing

SUPPLY TABLE

	mining	oil ref.	other ind.	im-ports	total
crud oil	20	-	-	-	20
oil prod	-	40	-	-	40
othe prod	-	-	105	-	105
sub tota	20	40	105	-	165

USE TABLE

	mining	oil. ref.	other ind.	fin. cons.	ex-ports	total
crude oil	-	20	-	-	-	20
oil prod.	-	-	20	10	10	40
other prod.	5	-	-	100	-	105
sub total	5	20	20	110	10	165
val. add.	15	20	85	-	-	120
total	20	40	105	110	10	285

Now suppose that a mining company in another economy would commission the refining of another amount of crude oil to our oil refining company of say 20 units, thus doubling the size of operations of the latter. Assuming the production coefficients constant this would occasion nearly a doubling of production and value added. Gross recording would neatly show this as example 7 demonstrates.

Example 7. An open economy with active processing as complete production process, recorded gross

SUPPLY TABLE

	mining	oil ref.	other ind.	imp-orts	total
crude oil	20	-	-	20	40
oil prod.	-	80	-	-	80
other prod.	-	-	105	-	105
sub total	20	80	105	20	225

USE TABLE

	mining	oil. ref.	other ind.	fin. cons.	ex-ports	total
crude oil	-	40	-	-	-	40
oil prod.	-	-	20	10	50	80
other prod.	5	-	-	100	-	105
sub total	5	40	20	110	50	225
val. add.	15	40	85	-	-	140
total	20	80	105	110	50	365

Net recording however would suggest completely different production structures. If gross recording would be applied the share of value added in total costs of the oil refining company would stay 20/40 or 40/80 while in the net recording it would change to 40/60. In this case it is precisely gross recording which gives the most stable description of the production process. With net recording shifts between normal production and processing result in large jumps in the input/output coefficients. Unlike in the cases dealt with above gross recording therefore is to be preferred. Example 8 shows how a net recording would work out:

Example 8. An open economy with active processing as complete production process, recorded net

SUPPLY TABLE

	mining	oil ref.	other ind.	imports	total
crude oil	20	-	-	-	20
oil prod.	-	40	-	-	40
proc. oil	-	20	-	-	20
other prod.	-	-	105	-	105
sub total	20	60	105	-	185

USE TABLE

	mining	oil. ref.	other ind.	fin. cons.	exports	total
crude oil	-	20	-	-	-	20
oil prod.	-	-	20	10	10	40
proc. oil	-	-	-	-	20	20
other prod.	5	-	-	100	-	105
sub total	5	20	20	110	30	185
val. add.	15	40	85	-	-	140
total	20	60	105	110	30	325

Admittedly, again with other examples things could look different. However, we consider the examples presented here to be quite realistic. We have deliberately omitted to dwell upon the reverse case (viz. that of a country involved in this kind of processing in a passive way) because one can doubt that in such a case the passive processor participates in a production process in the general sense. If someone buys raw materials, has them processed by another party and subsequently sells the finished product, the only production process he is employed in is very much like trade. In our example the statistics of the client's country would have to record gross exports of crude oil, gross imports of oil products and a domestic trade margin on oil products.

National Accounts being not the only statistics in which processing figures, it is also necessary to consider what recording is practiced in

other statistics and whether the proposed recording of processing fits these practices. This is all the more so when a clear link between the National Accounts and its basic statistics is desired. The next section will go into these questions, drawing on the Dutch situation.

2.4 Link with basic statistics in the present Dutch situation

At present in the Netherlands the statistical information on processing is mainly derived from the Production Statistics (PS's) of industries and Foreign Trade Statistics, the Balance of Payments playing only an indirect role. The PS's are on a yearly basis and provide data on production, intermediate consumption, wages, imports and exports etc. The Foreign Trade Statistics are published monthly; they are based on customs declarations obligatory for goods crossing the border.

The PS's provide data on the production accounts by industry. In the PS's regarding the manufacturing industry data regarding processing can be found under the headings "charged by third parties for services rendered by domestic companies" and "charged to third parties for work rendered for domestic companies". Data on payments per industry and receipts per industry are matched during the balancing of the supply and use tables. The result is net recording of passive and active domestic processing. Data on quantities and per commodity group are not available, nor on gross flows so that gross recording would not be possible.

The PS's also supply data on international processing. From the Foreign Trade Statistics data is available per commodity group, from the PS's data is only available on totals per industry group. On the questionnaires for the PS's for industry groups the amounts paid or received for passive or active processing respectively are to be booked under the headings 'charged by third parties for services rendered by companies outside the Netherlands' and 'charged to third parties for repairs and work rendered for companies outside the Netherlands'. Companies outside the Netherlands also include branches of the own company. The production statistics thus for international processing also observe a net money flow: money paid or received for processing done.

On the customs documents details are given by type of transaction for both imports and exports. A customs declaration states values and volumes. The value of consignments is determined by the declaration, in accordance with EC regulations. In the case of processing abroad the Foreign Trade Statistics observe two flows of goods, converted to money flows (with the aid of unit-values). The initial flows of goods and the return flows - imports and exports in the case of active processing and exports and imports in the case of passive processing - are recorded separately, that is on the moment they leave respectively enter the country.

For the linkage to the National Accounts it is important to note that:

- in the PS's amounts paid and received for processing are recorded as net amounts;
- in the Foreign Trade Statistics complete goods flow are recorded; recording the values stated on the declaration documents implies a gross recording.

Thus, in the case of net recording, there is a direct relation between the National Accounts and the PS 's. Net recording generally does not correspond with the Foreign Trade Statistics. Different recording in the National Accounts of processing abroad and at home is not an attractive option. It would give the wrong impression of different activities and partly destroy the link between the National Accounts and the PS's. This is also a point in favor of net recording of processing abroad.

However, net recording does not imply that the link with the Foreign Trade Statistics has to be sacrificed completely. It is possible to connect the input-output type tables with the totals in these statistics, although indirectly. E.g., the connection with Supply and Use Tables can be achieved on an aggregate level just by adding two rows to these tables and by entering the appropriate values. For passive processing a row is needed containing in the columns imports and exports of the Supply respectively Use Table the values of the exports of the goods to be processed and for active processing one containing in the same columns the value of the imports of such goods. If amounts paid are also booked under imports of goods and amounts received under exports, there

is an exact match with the totals of Foreign Trade Statistics without disturbing the picture of the production structure or violating the input-output coefficients. If one would like to show more detail, the extra rows could be split up over a number of categories, such as textile products, chemical products and metal products.

By way of illustration we consider the open economy with active processing depicted in example 4. Introducing an extra row for processed steel products to regain the connection with the foreign trade statistics can be done in two ways. First of all, a row could be entered just near the other commodities produced by the metal industry, thus offering a comprehensive description of this industry. Secondly, a row could be added below the tables as such, thus stressing the "external" character of this more or less artificial commodity. The first option in our example would look like this:

Example 9 Active processing, recorded net & linked with foreign trade statistics

SUPPLY TABLE

	met. ind.	other ind.	im-ports	total
steel prod.	200	-	-	200
coat-ing	10	-	-	10
proc steel		-	90	90
other prod.		825	-	825
sub. total	210	825	90	1125

USE TABLE

	met. ind.	other ind.	fin. cons.	ex-ports	total
steel prod.	-	200	-	-	200
coat-ing	-	-	-	10	10
proc steel		-	-	90	90
other prod.	45	80	700		825
sub. total	45	280	700	100	1125
val. add.	165	545			710
total	210	825	700	100	1835

Thus, the conclusion can be drawn that net recording of processing in the National Accounts corresponds best with the main data sources. There is a direct relation with the Production Statistics while the relation with the totals of the Foreign Trade Statistics can be kept intact.

Regarding the Balance of Payments the situation is a bit more complex. The Dutch National Bank compiles and publishes the Balance of Payments on a cash basis. With i.a. the data from the CBS' Foreign Trade Statis-

tics this is transformed to an accrual-basis Balance of Payments which is also published. In the cash-basis Balance of Payment processing is recorded net but in the Balance of Payments on accrual basis gross[2]. Thus, from the Balance of Payment no distinct preference for net or gross recording can be inferred.

2.5 International guidelines

International guidelines with respect to the recording of processing in statistics can be found in the handbooks on National Accounts and the Balance of Payments. Regarding National Accounts, the two most prominent handbooks are those of the UN Statistical Division and Eurostat, respectively the System of National Accounts (SNA, UN 1968) and the European System of Accounts (ESA). With regard to the Balance of Payments the IMF's Balance of Payment (BOP) Manual (IMF, 1991a) is most relevant.

At present, all three handbooks are under revision. The SNA revision has now reached a final stage and the ESA will follow suit. Because the latter will follow the first in all matters of content, with regard to the National Accounts handbooks we will focus on the SNA.

In the revised SNA processing will be dealt with in chapter XIV, The rest of the world account (see UN, 1992). According to this chapter, as a general rule processing should be recorded gross, mainly because the correspondence with the Foreign Trade Statistics. However, an exclusion to this rule is made regarding "small processing". Paragraph 64 states "When goods are returned after only a very small amount of processing abroad, such as storage or packaging, it can be argued that the net treatment should be adopted on the grounds that the processing is insignificant...". Of course the problem then arises what actually is "a small amount of processing". Admittedly, making a difference between cases in which the processing entails a complete production process and cases in which it constitutes only a sub-process as we have done, raises the same problem. The solution to this presented in the same paragraph

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2. For a description of the transformation of the Dutch Balance of Payment from cash to accrual we refer to the Eurostat publication 'Methodology of the Balance of Payments of the Netherlands' (Eurostat, 1988)

of the draft chapter might be a good one: "...goods should be treated as being processed when the goods returned from abroad have to be classified in a different Group (3 digit level) of the Central Product Classification from the goods sent abroad out of which they have been processed".

Thus, it can be concluded that the stress differs from our approach: in the wording of the revised SNA gross recording is the general rule and net the exception while we favour the opposite. However, depending on actual circumstances the final outcome could be much the same. This is not the case with the revised BOP. Although the reasoning mentioned above is acknowledged, it is deemed too difficult to follow in practice. As a consequence, for the BOP gross recording is the general rule, without any exceptions (see IMF, 1991b).

3 Dutch practice

Like mentioned above, in general the data from the Foreign Trade Statistics is on a gross basis. The data from the PS's is net. Thus, only the estimates regarding the balance of active c.q. passive processing can be compared because for active processing as well as for passive processing the estimates regarding the balance based on the PS's should in principle equal the estimates based on the Foreign Trade Statistics. However, in practice great differences occur.

These can be occasioned by various causes. First of all, the PS's are partly on a sample basis, so sampling errors may play a role. Secondly, data on processing are only asked in the production statistics of manufacturing industries, while the trade sector and the services sector might also engage in processing. Thirdly, it is often very difficult to track down related processing flows on imports and exports in the Foreign Trade Statistics. One problem is that, just because of the processing, goods change in character. Another problem is sometimes that part of the payment for the processing is in kind, for instance the processing party keeping part of the processed goods as payment. Another problem is that processed goods may be shipped to other countries, not crossing the border of the principal anymore.

This means often that after confrontation the PS data or data from the Foreign Trade Statistics (or both) have to be adjusted, resulting in a more consistent picture of the processing activities. It is often not possible to carry out this adjustment process on a very detailed level. The initial flows and return flows frequently are not easy to match in view of the intermediate processing phase. Then, when it is possible to match import and export flows pertaining to the same processing activities, there still is the problem of relating these to the money values in the production statistics, in other words to assign the goods transactions to an industry group. For these reasons it is often only meaningful to apply the confrontation on a more aggregated level. In these cases, totals of imports and exports of several commodity groups and money flows of various industry groups are compared per set. After adjustment, a distribution across activity groups can be made on the

basis of the original distribution.

Only when in-going and out-going flows of goods can be unambiguously linked is it possible to confront these with the data on processing of the processing industry group and the one that commissions.

To give an impression of the importance of processing abroad, the following rough summary :

PROCESSING IN THE DUTCH SITUATION (1985)

	ACTIVE		PASSIVE	
	import	re-export	export	re-import
		mln fln		
agricult. products	100	128	145	297
oil (products)	4309	4406	-	-
ore/metal	623	829	359	446
chemical products	1196	1299	224	428
textiles etc.	359	417	806	1367
machines/instruments	1902	1951	2095	2728
others	145	185	372	350
total	8634	9215	4001	5615

It is clear that in the Netherlands active processing activities by order of non-residents concentrate on crude oil, oil products, chemical products and machines/instruments. With respect to the passive transactions machines/instruments and textiles and textile goods play an important part. The total imports of passively processed goods amounted to 5.6 thousand million guilders in 1985. The total exports of actively refined goods were worth 9.2 thousand million guilders in the same year.

The only important example of active processing as a complete production process in the Netherlands is refining crude oil. This appears to be a particular difficult area to describe in statistics because a number of practical problems exists with regard to the observation of the processing transactions rendering net recording impossible, even if it would be desirable. In oil refining on account of foreign companies, often only certain fractions of the oil are delivered back to the owner. For the remaining fractions there is no market in the country of the owner or the price becomes too high because of transport costs. Some-

times it is agreed that the remaining fractions serve as payment for services rendered. The Dutch refinery industry e.g. can use all remaining fractions in its own refining process. Apparently petrol not extracted from the crude oil supplied by the owner is sometimes even delivered to the owner in exchange for other fractions which stay behind and is thus recorded as export of processed products.

It will be obvious that in this case it is not possible to reach a reasonable isolation of the processing transactions. There is no other option than to process and publish "normal" and "processing" transactions mixed together. In fact processing transactions are then implicitly treated as normal transactions. This results in gross recording which admittedly necessitates some imputations.

Thus, it may be concluded that in the Dutch situation in general a net recording is preferable from the point of view of the National Accounts, although in some specific cases an exception has to be made.

4 Conclusions

For the description of the production process in the framework of National Accounts net recording of processing is in general to be preferred. This recording leads in most cases to the most realistic depiction of the production structure and to relatively stable value added/total costs coefficients. An exception has to be made when processing amounts to a complete production process; in the Netherlands this is only relevant for oil refineries.

Our recommendation of net recording does not imply that in our view processing is to be seen as a service; if a classification in categories like 'goods' and 'services' is at all needed, it should be based on substantial criteria and not just on the way of recording.

In the Netherlands, net recording of processing in the National Accounts provides a fairly straightforward connection with the basic statistics: it corresponds directly with the Production Statistics while a connection with the totals of the Foreign Trade Statistics can be established by adding extra rows to the Supply and Use Tables. This also provides a connection with the Balance of Payments on accrual basis while net recording provides a direct link with the Balance of Payments on a cash basis

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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/58 **Major changes and results of the revision of the Dutch National Accounts in 1992**, Department of National Accounts (1992, forthcoming).
The revision in 1992 has improved the Dutch National Accounts in three ways. First, new and other data sources have been used, like Production statistics of service industries, the Budget Survey and Statistics on fixed capital formation. Secondly, the integration process has been improved by the use of detailed make- and use-tables instead of more aggregate input-output tables. Thirdly, several changes in bookkeeping conventions have been introduced, like a net instead of a gross registration of processing to order.

NA/59 **A National Accounting Matrix for the Netherlands**, Keuning, Steven and Jan de Gijt (1992).
Currently, the national accounts typically use two formats for presentation: matrices for the Input-Output tables and T-accounts for the transactions of institutional sectors. This paper demonstrates that presently available national accounts can easily be transformed into a National Accounting Matrix (NAM). This may improve both the transparency and analytic usefulness of the complete set of accounts.

NA/60 **Integrated indicators in a National Accounting Matrix including environmental accounts (NAMEA); an application to the Netherlands**, De Haan, Mark, Steven Keuning and Peter Bosch (1993).
In this paper, environmental indicators are integrated into a National Accounting Matrix including Environmental Accounts (NAMEA) and are put on a par with the major aggregates in the national accounts, like National Income. The environmental indicators reflect the goals of the environmental policy of the Dutch government. Concrete figures are presented for 1989. The NAMEA is optimally suited as a data base for modelling the interaction between the national economy and the environment.

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

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

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

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

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

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