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CONSTANT WEALTH NATIONAL INCOME: ACCOUNTING FOR WAR DAMAGE WITH AN APPLICATION TO THE NETHERLANDS, 1940-1945

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Summary

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. A very useful example is that of the damage caused by the second world war. At a 1945 conference in Paris this damage was assessed by representatives of 17 countries, in order to determine a basis for German reparations payments. The present paper starts out by discussing the types of damage distinguished at this conference and the conceptual issues raised. Next it is discussed if and how each type of damage should be included in national accounts. We conclude that 'what if' type damage, such as decreases in the level of production, should not be included in the accounts but is to be left to analysts to size-up. In contrast, factual damage such as destruction of buildings, equipment, consumer durables, should be included in the national accounts. Next the proper way to do the latter is considered. The solution of just dealing with damage in the reconciliation account is rejected. First, because of the rather confused nature of the latter. And second, because this solution is insufficient to ensure that in case of crisis and disaster a synoptic measure is available that reflects the decline in prosperity more adequately than traditional national income. Therefore we propose to introduce, in addition to the standard national income concept, an alternative income concept: "Constant wealth national income". This is an operational version of the Hicksian income concept, which says that income is that what can be consumed without being worse-off at the end of the period. In practice, the constant wealth national income is obtained by deducting from current national income the damage to and loss of all goods that are within the production boundary of the national accounts and that last longer than one year. Valuation should be at market prices. Thus we propose to include damage to e.g. consumer durables (which is not in the reconcliation accounts), but exclude depletion of e.g., subsoil assets (which is in the reconciliation accounts) in order to achieve full conceptual consistency between standard national income and constant wealth national income.

Finally, by way of an illustration, the paper employs 1945 estimates of damage in the Netherlands in order to arrive at a constant wealth national income for

1940-45. It is shown that, in 1938 prices, constant wealth national income is very much lower than standard national income and reflects the decline in prosperity during these years far better.

Contents

1. Introduction [1]

In the discussion of the revision of the SNA at the 1985 IARIW conference, a participant from Iran pointed out that the national accounts give a false picture of the economic reality of countries that sustain substantial damage as a consequence of, e.g., war. In that case, the national accountants' national income may remain constant, even rise, whereas in reality a country impoverishes as a consequense of the destruction sustained. This problem seems to have led to a session devoted to accounting for crisis and disaster at the 1987 IARIW conference. The last time any serious international conference was devoted to something of this kind was in November/December 1945. At that time a seventeen country conference was held in Paris on the subject of German reparations for the damage inflicted by Germany during the second world war.

The basic inputs for the conference were Memoranda of the governments of the participating countries, containing estimates of damage due to the war with Germany. Each country employed different definitions of damage; consequently, the conference had to bring some order and to face some conceptual issues. The problem was, however, not tackled from an explicit national accounting point of view. This is not surprising, since national accounts were still in the embryonic state. The first systems were just being developed in the U.S., U.K., the Netherlands, Norway, and France. Statisticians focussed their efforts on the development of these systems as a tool for guiding reconstruction and growth, rather than on thinking through a conceptual framework to deal with the exceptional conditions that they preferred to purge from memory as soon as possible. Consequently, the Paris conference determined damage figures in a pragmatic way and employed these as just one input in the determination of a key for distributing German reparations over the participating countries. Subsequently, there was no incentive to improve on the basic data or on the concepts, because it soon became clear that nothing much would become of the reparations anyway: it no longer seemed such a good idea to remove productive capacity from a Western Germany that was rapidly developing into a buffer zone and then an ally in the cold war.

In section 2 we describe the issues raised at the Paris conference in connection with measuring damage. This is useful as a background for a discussion of possible ways to deal with war damage within a national accounting framework. In section 3 we turn to the latter and propose a

specific treatment. In section 4 we illustrate the latter with Dutch data for the second world war.[2]

2. The 1945 reparations conference [2]

The Memoranda submitted to the reparations conference contained a wide variety of damage claims, in spite of a guideline that had been drawn-up beforehand. At the conference, a group of six statisticians - one from each of the 'big three' (USA, UK, France) and three from smaller countries - was formed to bring about some order. Nevertheless, lengthy discussions were needed in order to obtain some degree of consensus.

The least controversial category was that of:

1. Direct physical damage.

The items included may be grouped as follows:

1.1 Damage to goods now considered as investment in fixed capital (building including dwellings, equipment including transport equipment, livestock, infrastructural investment).
1.2 Damage to stocks of goods, other than investment goods, held by industries.
1.3 Damage to land.
1.4 Damage to stocks of non-investment goods held by government and to consumer durables held by households; this group includes, e.g., works of art.
1.5 Loss of gold and other monetary items.

Even here there were some moot points. Thus, one issue was which stocks should be included in 1.2: just those that were present at the beginning of the war, or also those that were produced during the war and then damaged or requistioned by the occupation force? This problem was complicated because frequently requisitioned goods were paid for in 'Reichmarken' for which, however, nothing could be bought from Germany at the time, while they lost all value at the end of the war. Another issue was whether a 'national' or a 'domestic' concept should be employed (though, of course, the issue was not discussed in these terms). Thus some countries included the book value of

foreign investments lost, in 1.1, whereas others included something similar, in 1.5. Yet another issue was whether or not to include decreased fertility of the land due to removal of the original farmers. It was decided not to include this but to restrict 'damage to land' to items that, by and large, are equivalent to destruction of land improvement investments as they are currently included in the national accounts.

Each of the items 1.1-1.3 represent damage to goods that the current systems of national accounts include in investment, either investment in fixed capital or investment in stocks. In contrast, item 1.4 covers damage to goods the national accounts include in consumption, whereas the items in 1.5 are only included in the capital finance account. Interestingly, damage to military installations, including dismantling in occupied territories, were not included in category 1; the cost of their construction, however, is included in the second category, budgetary expenditure on the war, to be discussed below.

In each of these cases there was, of course, the problem of valuation. Attempts were made to employ 1938 'replacement value'. This is not defined as the market value of the goods at the time damage occurred, converted to 1938 prices, but rather as the 1938 value of a corresponding new good. Clearly, this yields a higher value than the former concept would. In cases where only current value data were available, these were deflated to 1938 values by means of an index of wholesale prices.

A second category of war damage was:

2. Budgetary expenditures on the war.

Naturally, this is a very flexible category. It includes military expenditure, but here the issue is whether to include just the excess over peacetime expenditure or all of it. It was discussed whether just the expenditure made from the start of the war should be included, or whether all increases in military budgets since Hitler rose to power should be taken into account as well. Moreover, should items such as subsidies to diminish the cost of living, sustenance of fugitives and evacuees be included? Even the discounted value of future pensions of families of victims could be included. No precise choices were made, except in case of pensions, which were excluded.

An equally elastic category was:

3. Costs of occupation

This category could include the costs of German occupation forces charged to the occupied country, the goods and services delivered to Germany, without payment or for payment in 'Reichsmarken', the budgetary expenditure of the occupied country's own ministries that could be attributed to occupation, and so on.

4. Repair and maintenance not carried out due to the war.

This category led to considerable discussions at the conference: was the maintenance that would have been carried out under peacetime conditions, but was now neglected, to be counted as war damage? Eventually, it was, though only implicitly: it was not explicitly recognized as damage but in the computation of the key for the distribution of reparations over countries it was included.

5. Production lost as a consequence of the war.

Some countries had calculated the value of national income that had not been generated as a consequence of the war: the 'normal' income less actual income. Similarly, the expected post-war loss of national income could be included. In the case of the Dutch memorandum, estimates for both items had been provided. At the conference, however, loss of production was refuted as legitimate war damage. Of course, to some extent the loss of production is already covered by the inclusion of damage to plants and equipment in category 1. Moreover, another category of damage was recognized that is important in this respect:

6. Human effort and casualties.

The memoranda contained estimates of the number of man years allocatable to the war. Items included were the man years spent in the military effort, the man years spent in war production, the man years lost due to deportation of labour to Germany. In addition, the memoranda contained estimates of the number of persons killed and wounded. No estimates were made of the number of man years lost due to such factors as malnutrition.

The final estimates of the damage due to the war against Germany were summarized by Derksen in one of his reports to the Netherlands Central Bureau of Statistics after attending the conference. Table 1 reproduces them. It also includes national income estimates for most countries. These have been taken from a source published shortly after the war (Statistical office of the UN, 1948, National income statistics of various countries, 1938-1947), in order to achieve maximum comparability with the damage estimates. The data in national currencies have been converted to dollars using the conversion rates employed in the memoranda. Definitions vary a bit between countries; data for Australia are for the fiscal year 1938/39, for Yugoslavia for 1939.

After the data in table 1 had been determined by the conference, the next problem was to determine the reparations to be paid. There were no data on the amount Germany could pay. A calculation made by Derksen, based on the national wealth of Germany before the war, a crude estimate of damage, and an estimate of the minimal requirements for the German economy at a subsistence level, led to a maximum availability for reparations of 4 to 5 billion 1938 US dollars. However, the conference did not fix any total sum, but instead the three major nations decided on just a key for the distribution over the participating countries. More precisely, two keys were determined, one for industrial equipment and ships and one for all other reparations; the latter differed from the former only in that the USA declined their share. The way the key had been constructed was kept secret, probably in order to avoid quarrels on the subject. However, it turned out to be fairly easy to derive the weighting scheme the 'big three' had used: there were shares for 17 countries and only eight categories of damage. Hence a regression would reveal the weights attached to each category. Derksen made the computation. The result is displayed in table 2. It turns out that each dollar of damage in each of the four categories was given an equal weight; one person year spent on the war effort was valued at 500 dollars, every person killed also rated 500 dollars, whereas each person year of forced labour was valued at 170 dollars. Using the Dutch implicit GDP deflator this would amount to some 7000 1980 dollars for each person killed. The regression, however, left some small residuals. These were probably introduced in order to account for suspected inaccuracies in the damage data. Thus the claims of the Netherlands and Yougoslavia were slightly raised, those of France and Czechoslovakia lowered.

Table 2. Weights attached to each category of damage at the Paris conference

One billion dollars of physical damage	1
One billion dollars of war expenditure	1
One billion dollars of occupation cost	1
One billion dollars of backlog in repair	1
One million person years spent on the war effort	0,5
One million person years of forced labour	0,17
One million killed	0,5

Actually, the results of the Paris conference were not used for any purpose at all: the total reparations payed by the western part of Germany to the west were negligeable; the eastern zone was a different case altogether. Mostly, only equipment, valuables and consumer durables that had been robbed and could be traced were returned to the countries concerned. The issue of reparations was also neglected in the literature on economic history. This was remedied only quite recently by Cairncross (1986), for the case of reparations to Britain. Nevertheless, the results of the Paris conference are interesting in their own right, because they provide an overview of the kinds of damage substained and, hence, a good point of departure for a discussion of the proper treatment of damage in the national accounts. We now turn to that subject.

3. Damage from the viewpoint of national accounts

3.1 Which damage should be dealt with by the national accounts?

The cases of damage reviewed by the Paris reparations conference can be grouped into two classes: 'what if' type damage and factual damage.

'What if' type damage occurs when a war has caused things not to happen. The major category of damage of this class is the production that could not be carried out as a consequence of the war. This, in turn, consists of two components: the production loss during the war and that after the war. In the Dutch case the Memorandum submitted to the Paris conference estimated the first component at some 75% and the second one at somewhat over 80% of the 1938

national income. A second important category of 'what if' type damage is the backlog of repair and maintenance.

If polled whether or not to include 'what if' type damage in the national accounts, the gut reaction of national accountants would probably be strongly negative. One reason given would be that the measurement of this class of damage requires too many assumptions. Yet, usually national accountants are not afraid to make assumptions. Changes in stocks are habitually revalued employing assumptions about their market prices; the 'production' of owner-occupied dwellings is measured employing assumptions about its value if they would have been rented; keys are applied throughout the estimation procedures; quarterly accounts are usualy estimated by combining extrapolation with factual information, and so on. Therefore, the basic reason why 'what if' type damage does not fit into a national accounts framework is not that it requires assumptions. Instead, the reason is that 'what if' damage cannot be measured directly even conceptually. The examples of the use of assumptions just given, refer (with one exception[3]) to assumptions employed purely as a measurement device: conceptually, the information concerned could be obtained directly. In the case of 'what if' type damage, a model has to be constructed of the world as it would have been under peacetime conditions: an 'anti-monde' has to be created. The consequences of the war are then obtained by means of residual imputation: as the difference between the 'anti-monde' and historical reality. Conceptually, this approach is alien to the national accounts, since the latter are designed to provide a picture of things that actually happened, not of what could have happened. This does not mean that national accounts can completely ignore 'what if' damage: they have to provide the factual base from which analysts can construct an anti-monde . In the present case this is fairly easy, because the natural point of departure for the construction of an anti-monde of production and of maintenance not carried out due to the war, is the national accounts for the periods before and after the war. From these data a 'normal' level of production and maintenance (the anti-monde) can be obtained employing extrapolation, interpolation and more refined techniques. This is the approach underlying the estimates for the Netherlands we referred to.

An intermediate position between factual damage and 'what if' damage is taken by the budgetary expenditure on the war and by the person years devoted to the war effort: here 'what if' type assumptions are needed in order to separate

expenditure and labour attributable to the war from the normal or peacetime effort. From a national accounting point of view, the same holds true here as in case of production loss: the national accounts could provide the data needed to obtain estimates, but the estimates themselves are beyond the boundary of the accounts. In case of expenditure on the war, the data are, of course, part of the accounts: government expenditure both before and during the war are specified in the accounts, broken down into civilian and military expenditure. Hence analysts can derive estimates of the budgetary costs of the war.

In the case of person years devoted to the war, the situation is somewhat more complicated. The accounts of the SNA show the labour costs incurred by government by employing civilian and military personnel. In contrast, labour labour costs incurred by industries are not shown directly. However, if the full-fledged SNA is implemented, the data are available by means of which these could be calculated indirectly: the input-output tables. The military purchases of government are shown as the intermediate use of the military part of producers of government services. In the industry-by-industry table these purchases are broken down according to the industry of origin. Hence, by means of input-output analysis the labour costs to which the military purchases have led can be compiled, and an appropriate part attributed to the war effort. Consequently, a full-fledged system of national accounts contains all the data an analyst needs in order to estimate the labour costs of the war effort. Of course, these costs should not be added to the budgetary costs of the war, since they are part of the latter. Thus, from the point of view of costs, the Paris conference, which did add the person years spent on the effort to the budgetary costs, was guilty of double counting. Essentialy, however, the conference appears to have approached this item not from the point of view of costs, but rather from that of human effort as such. Of course, the human effort in terms of person years could be calculated from the labour costs, employing data on the wage rates in industry and civilian and military government salaries. The resulting estimates in person years, however, are more closely related to a system of labour accounting than to national accounting.

We now arrive at factual damage. Two types of factual damage covered by the Paris conference are the person years lost in forced labour and the number of persons killed. Though no 'what if' issue is involved here, these types of

damage do not belong in the national accounts, because the latter focus on accounting for value flows and changes in stocks of valuables. Hence, a system of labour accounts would be the proper place to account for the human damage caused by the war.

This leaves just one category of damage: the direct physical damage caused by the war. This is the type of damage that causes laymen as well as open-minded national accountants to believe that national accounts provide a far too rosy picture of economic development during a war: a national income that conscientiously accounts for all value created, but, with an Olympian air of detachment, ignores all value that is simultaneously being destroyed. Consequently, an adjustment of the accounts to include direct physical damage seems warranted.

3.2 The reconciliation account

Adam Smith did not write, back in 1776, 'The Income of Nations', but his subject was the Wealth of nations. In contrast, this paper will not be presented at a conference of the 'International Association for Research in Wealth and Income', but the research is in income and wealth. This difference shows a change of emphasis in thinking about income and its importance relative to wealth. Two hundred years ago, property was, probably, a more important determinant of the distribution of income over both individuals and nations than today. There is evidence that the capital-output ratio has sharply declined, at least as far as physical capital is concerned. Consequently, two hundred years ago there was reason to stress wealth as a source of income and as an indicator of prosperity. Today, the dominant notion appears to be that wealth as such is of limited importance since sustained growth of income is possible without wealth and will, in a fairly brief period of time, lead to an enormous increase in wealth. Consequently, the conceptual linkage between income and wealth has been loosened to the extent of being virtually reversed. Changes in wealth do not directly enter national income, the latter is defined independently.

The way national income is defined independently is immediately evident from the fact that a synonym for 'national income' is 'national product'. This concept was introduced in the US in the 1930's. It shows that the income concept in the national accounts is essentially the value added in the

production process. The national accounts recognize only one source of income at the world-wide level: production. At the national level, there is another source of income: the rest of the world; at the sectoral level, other sectors may be a source of income. But the only original source of income is production. In the national accounts the income from production is distributed and redistributed sectorally and internationally, both because of direct participation in the production process (e.g., in the case of wage receipts of households) and because of property claims (e.g., in the case of dividends and interests), but no income is generated except in the production process. Similarly, the only costs deducted in the national income calculations are those that have to do with the production process and the only investments recognized are those that lead to future production. Consequently, as soon as a production boundary is defined, investments are also defined. Thus equipment installed in industry is investment, because it leads to future output within the production boundary; whereas purchases of consumer durables by households are not investment, because the future output they lead to is not within the production boundary. Similarly, wear and tear of equipment is subtracted in the calculation of (net) national income, in sofar as it can be considered as part of the production process and can be considered as 'consumption of fixed capital' that is needed for production. But there is no provision for consumption of consumer durables installed in earlier periods. And destruction of fixed capital by other causes than regular use in the production process is not deducted from national income.

All this is acceptable under ordinary conditions. Then it is true that growth of wealth and spending capacity or, for short, of prosperity, coincides with growth of the value added in production. In the income distribution process as described in the income and outlay accounts, it is sufficient to show how the value generated by current production is channeled to other groups of economic agents than those who created it. In the capital finance accounts, under normal conditions it is acceptable to show how the value created in production is reshuffled between groups of agents by changes in financial assets and liabilities. This way an adequate picture of the purchasing power of agents results. But under extreme conditions the national accounts' concept of income as a flow within the production boundary and of capital finance as a partial reshuffling of the purchasing power represented by this income, is no longer adequate as an approximation of 'prosperity'. One example of extreme conditions where the national accounts' income concept breaks down is rapid

inflation. Under conditions of rapid inflation, the decline in the real value of fixed-claim financial assets causes substantial redistribution of claims on the wealth of a nation. Crises and disasters, such as war, are another major example of a breakdown of national product as an indicator of prosperity.

How should these cases be solved? One remedy is the standard panacea for many of the ailments of the national accounts: put it in the reconciliation account. This solution is usually advocated for the cases of inflation accounting, discovery and depletion of natural resources, changes in the length of the lifespan of consumer durables, and so on. Hence, war damage and the consequences of other forms of crisis and disaster might go this way too. But what exactly is the reconciliation account? As its name indicates it has not been developed as an independent statistical tool. Instead, it is a set of linkage tables between the current national accounts (the production, income and outlay, and capital finance accounts) on the one hand, and changes in the balance sheet on the other. The balance sheet represents an attempt to show the net worth of sectors and of the nation. Thus the reconciliation account is a bridge between the sysem of flows that are important if production is the point of departure, and the stock system that results if net worth is the focus. The former derives from modern economic anaysis, the latter from business accounting and property taxation.

This origin of the reconciliation account makes it susceptible to a role as the dustbin of national accounting. The reconciliation account given in the 1977 provisional guidelines of the UNO shows heavy traces of this. Consider its list of items classified by cause.

Table 3. The items of the UN reconciliation account, classified according to 'cause'

13.1 Revaluations due to price changes

- 13.1.1 Market prices
- 13.1.2 Replacement costs
- 13.1.3 Rate of discount or capitalization factor
- 13.1.4 Foreign currency exchange rates

13.2 Issue of IMF special drawing rights

13.3 Adjustments in respect of unforeseen events

- 13.3.1 Unforeseen obsolescence
- 13.3.2 Differences between allowances included in capital consumption for normal damage to fixed assets and actual losses
- 13.3.3 Transfers to net equity of households on reserves of life insurance and pension funds
- 13.3.4 Uncompensated seizure of assets

13.4 Net changes in value of tangible assets not accounted for in the capital finance accounts

- 13.4.1 Natural growth less depletions
  - 13.4.1.1 Breeding stock, draught animals, dairy cattle and the like
  - 13.4.1.2 Timber tracts and forests
  - 13.4.1.3 Plantations, orchards and vineyards
  - 13.4.1.4 Fisheries
- 13.4.2 New finds less depletions of subsoil assets
- 13.4.3 Losses in land and timber tracts in catastrophes and natural events

13.5 Adjustments due to changes in structure and classification

- 13.5.1 Changes in the institutional sector or subsector of owners
- 13.5.2 Acquisition or divestment of subsidiaries and consolidation or decomposition of statistical units for other reasons
- 13.5.3 Changes in the classification of entries

13.6 Termination of purchased patents, copyrights, trade-marks etc.

13.7 Statistical discrepancies and discontinuities.

First, the list contains a number of items that reflect the need to revalue stocks of assets as they were on the balance sheet at the beginning of the period. This need occurs because of changes in prices. Next comes an item which is a perfect illustration of the dustbin role of the reconciliation account: issue of IMF special drawing rights. These are in the reconciliation account, simply because they did not yet exist when the capital finance account of the 1968 SNA was drawn-up. If they would have existed then, they would no doubt have been treated similarly to monetary gold. Now there was no recourse but to dump them in the reconciliation account.

Next follows a category of unforeseen events. The first two items in this category include the physical damage to plant and equipment resulting from crisis and disaster, the fourth one (13.3.4) would include robbery by an occupying power, whereas the third item is just a correction of a treatment in the current accounts that is deemed inadequate.

Category 13.4 throws in the changes in the value of a number of items that were not deemed to be worthy of inclusion in the capital finance account; but the items concerned are considered to be important enough to include them in the balance sheet. Here the common denominator is that the items mentioned are important for production and that initial outlays on them (including costs of exploration in case of subsoil assets) are included in investment in fixed capital in the current accounts. Thus, the reconciliation account is employed in these cases to correct for the fact that these types of assets may also come into being without investment costs and be depleted or die. Item 13.6 plays a role that is somewhat similar: it may be viewed as an allowance for the consumption of intangible capital, though the allowance is of the sudden-death type. Finally, items 13.5 and 13.7 are technical adjustment items.

It should be clear from this list that the reconciliation account is not dominated by a single, powerful concept. It is, therefore, not difficult to understand why many countries don't draw it up. Although some data in the account may be worthwhile, the account as a whole is rather low on the list of priorities. Nor is the reconciliation account as it stands seem an adequate remedy for the inadequacy of the current accounts in periods of crisis and disaster. Thus destruction of consumer durables is not accounted for. Anyone

who has ever read descriptions of living conditions in Europe in 1945 will recognize that this is essential if the national accounts are to provide an adequate picture of prosperity or the lack of it. For periods of war and other large scale troubles, the reconciliation account is at best a disorderly and incomplete attempt to reconciliate national accounts with the truth.

To remedy these and other shortcomings, Ruggles (1987) made a number of proposals for clarification. One of these is to show the effects of price changes in a separate revaluation account. This suggestion is also made in a recent INSEE (1986) paper, which proposes a restructuring of the reconciliation account into two separate accounts. One of these is a true 'reconciliation account': the 'changes of classification and adjustment account'. It contains items 13.5 and 13.7 of the UN account. The other account is called 'Non-produced values account'. It consists of two blocks: one for revaluations and one for exceptional events. The revaluations block is, in turn, broken down in two parts: one for the effects of changes in relative prices and one for effects of changes in the general price level. The latter seems to provide an adequate data base for inflation accounting. The exceptional events block of the 'non-produced values account' is also broken down into two parts: one for events that raise wealth (natural growth of livestock is an example) and one for events that lower wealth. The latter part includes, of course, consequences of crisis and disaster.

The INSEE proposal is a considerable improvement over the present reconciliation account. However, there still are two major problems. The first of these is the coverage of the account. Destruction of consumer durables is not included (except if they are held by non-household sectors), nor destruction of infrastructural constructions, human capital, and so on. On the other hand, loss of land, orchards and vineyards, depletion of subsoil assets, and so on <u>are</u> included. It is rather difficult to understand the borderline between items that are in and items that are out. From a theoretical point of view, it is rather unsatisfactory that no sharp criterion is formulated to determine what should be included in the 'Non-produced values account'. From a practical point of view, a borderline as drawn-up in both the present reconciliation account and the INSEE proposal, is unsatisfactory in the case of accounting for crisis and disaster. In the Dutch case, the ratio of damage to, on the one hand, consumer durables and to, on the other hand, infrastructure to plants, equipment and dwellings was some 3 to 4. Leaving it out would lead to

grossly underestimating the loss of prosperity due to the war. No doubt the same holds true for other kinds of disasters, like floods and quakes. This was recognized at the Paris reparations conference: many issues were debated there, but whether or not to include damage to consumer durables and infrastructure in the estimates was not an issue at all.

The second remaining problem with the restructured reconciliation account is that the issue of defining a measure for prosperity is not addressed. We are still left with, on the one hand, a national income that is defined from the point of view of production, and on the other hand a list of items - though neatly structured in the INSEE proposal - that correct the idiosyncracies of the national income concept. As national accountants are very much aware of, human beings want simple and reasonably adequate measures that express complex phenomena in just a few key indicators. Put differently, rather than having a national income and a list of corrections, one would like to have an additional national income measure. The next subsection proposes one.

3.3 Constant wealth national income

'Income' is by no means a unique concept. At the micro level one may distinguish a whole series of alternative income measures, each measuring something quite different. An example is given in van Bochove (1987). First, one may distinguish primary income: income from production after redistribution on the basis of property claims. Next, one may define secondary income: the income resulting after net transfers have been added to primary income. A third concept is tertiary income. Here Reich's (1987) question 'Does consumption imply income' is answered in the affirmative: added to the secondary income are the individual benefits of collective expenditure. These three income measures have one common characteristic: in the aggregate they remain within the basic income concept of the national accounts, i.e.,income deriving from production within the production boundary of the national accounts. The latter is, if the income concept is widened further, to include the benefits of informal household production. The resulting income concept has sometimes been referred to as 'quartary income'. It is a problematic concept, because of the arbitrary valuations involved; but the basic point should be well taken: informal production leads to increased availability of goods or services and could hence be considered as an addition to income.

However, where should the line be drawn? Does availability of goods and services always imply income? Actually, the line has been drawn some fifty years ago by Hicks (1940): 'the appropriate concept of individual income can be nothing else but what the individual thinks he can consume without making himself worse off. This is purely subjective, incapable of objective measurement; so that in order to get a statistical measurement of this sort of income, we can only proceed by taking some conventional rule about what the individual ought to reckon as his income. Probably it is worthwhile to do this; but we should be clear what we are doing' (p. 123).

These lines contain what is now commonly known as the Hicksian income concept. Hicksian income can be defined as actual consumption plus what could have been consumed leaving wealth constant. In a recent paper, Sunga (1987) recognizes that 'Hicksian income' is an appropriate concept to tackle the issue of inflation accounting. He proposes to employ the term 'comprehensive income'. This, however, might be misleading because his concept does not include such items as the individual benefits of collective expenditure, the value of informal household production, and other items that might be included in a truly comprehensive income measure. Instead, the constancy of wealth is the distinguishing feature of Hicksian income. Therefore, we shall employ the term 'constant wealth income' for our operational version of Hicks' income measure. It should be noted that Hicks' phrase 'can be consumed' should not be taken too literally: he did not refer to the availability of consumption goods only. Instead, his issue was whether saving should be included in income; at the time consensus had not yet been reached on this issue. Consequently, at the aggregate level, national income includes not just the value of the available consumption goods but also that of investment goods, raw materials and so on.

There is a basic difference between the standard national income concept and constant wealth income. The standard concept is, as we noted above, based on the idea that at the aggregate, world-wide level, income is generated by production alone. The constant wealth income concept, in contrast, defines income differently, viz. as the sum of consumption and the change in wealth. Hence in this concept the definition of wealth is all-important. This is the basic issue in operationalizing the concept. If we were to follow, e.g., the implicit definition of wealth in the provisional UN guidelines discussed above, we would end up with a constant wealth income concept that is just as

confounded as the present reconciliation account. Therefore, the 'wealth boundary' should be drawn with far greater care, in order to yield a concept that is in full harmony with the current national accounts.

The term 'wealth boundary' was used on purpose, because it immediately suggests the solution to the problem of defining an adequate wealth concept: in the aggregate, at the world-wide level, consistency between the standard income concept and the constant wealth concept can only be obtained by drawing the wealth boundary exactly where the production boundary is drawn: the two should coincide, so that there is one and only one set of goods and services considered throughout the accounts. Thus, in delineating constant wealth income we propose to define aggregate wealth as the value of all goods (and only these) that have been produced within the production boundary. This way, no new income items are pulled like rabbits out of a magician's hat. Instead the standard national income concept and constant wealth national income refer to the same set of goods and services. The only difference between the two is that the former includes just the income flow generated by current production, whereas the second concept includes the income generated or lost by changes in the various stocks of goods.

It goes without saying that the production boundary, and hence the wealth boundary, is not naturally given. The boundary drawn in the present SNA is a hybrid between, on the one hand, the set of items that are either sold or whose production leads to a monetary remuneration of the production factors involved, and, on the other hand, a set of items brought in by a wider criterion like the third party criterion. One of the present authors has proposed to separate these two in, first, a core of the national accounts and, next, a set of modules (cf. e.g. van Bochove and van Tuinen, 1986, van Bochove and Bloem, 1986). In the modules, alternative production boundaries could be drawn, including, e.g., additions to and depletion of subsoil resources, informal production, and so on. However, independently of the way the production boundary is drawn and of whether the core-modules structure is adopted, the identity between the wealth boundary or boundaries and the production boundary or boundaries must be mantained.

The identity of the production and wealth boundaries implies that there are considerable differences between the investment and change in stocks concepts employed in the flow accounts, on the one hand, and the changes in

wealth on the other. We already noted that consumer durables purchased by households are not included in investment, because households' 'output' is beyond the production boundary. However, because the durables themselves are within the production boundary, they are within the wealth boundary too. Therefore, changes in the stocks of durables of households are to be accounted for in constant wealth income. A similar discrepancy between the current accounts and constant wealth income holds true in case of stocks of non-durable consumer goods held by households and government. In the current accounts, stocks are held only by producers. In constant wealth income, all changes in stocks are to be included, irrespective of who holds them, provided the goods concerned are within the production boundary.

The identity of the production and aggregate wealth boundaries also implies differences between consumption of fixed capital and changes in wealth. In the former concept, as we already noted, only decreases in the real value of fixed capital are taken into account that can be considered as a normal consequence of the production process. Moreover, a discrepancy exists between the coverage of consumption of fixed capital and investment in fixed capital. Thus investments in infrastructure (land, roads, bridges, and so on) are included in investment in fixed capital - presumably because they are installed by government or other producing units - but the decline in their real value is not covered in consumption of fixed capital because the output concerned is beyond the production boundary.

In the constant wealth income concept these discrepancies are removed. What is relevant here is the actual change in the real value of existing fixed capital, irrespective of whether the change is related to current production. Thus, unforeseen obsolescence and forestalled obsolescence are to be taken into account, as well as damage not related to production. Similarly, decreases in the value of infrastructural works are to be taken into account because the works themselves are within the production boundary.

The delineation of constant wealth income implies two major differences with the reconciliation account. The first of these is that the value of changes in stocks of consumer goods held by households are taken account of in constant wealth income but not in the reconciliation account. The second difference is that changes in the real value of subsoil assets, which are beyond the production boundary, are not part of constant wealth income, though they are

listed in the reconciliation account. In another case the line is less clear: should natural growth less depletions (the items in 13.4 table 3), be included in constant wealth income? On the one hand, these items could be regarded as being beyond the production boundary, so that they should not be included. But on the other hand, unlike subsoil assets, they require continuous attention and outlays to maintain. In this sense, they are produced and this production leads to a monetary remuneration. The latter argument would lead to their being within the production boundary. Moreover, if orchards are planted, breeding stock bought, and so on, the outlays are recorded as investment in the current accounts. Therefore, to include the value of their natural growth and depletion in constant wealth income seems warranted. In case of intangible assets, there is no difference between the constant wealth income concept and the reconciliation account: these have been produced within the production boundary and hence enter wealth. The treatment of their decline in value adopted in the reconciliation account could be employed in the constant wealth income concept as well.

So far, our discussion has been restricted to the issue of coverage. How about valuation? The UN guidelines on the reconciliation account opts for valuation at market value. The underlying argument is that the same valuation concept is employed in the current accounts - at least in the income and outlay accounts. However, market values of stock items may be quite different from market values of current outputs, even if the goods concerned are identical. Thus, a new car sold loses a significant part of its value by the sale as such, even though no physical change is involved. The same applies to an even greater degree to other consumption goods. This means that valuation of stock items at their own market prices leads to inconsistency with the current accounts. Another problem exists in the valuation of existing infrastructural works (e.g., bridges): frequently there are no market prices for them at all.

For these reasons, if conceptual consistency between constant wealth income and standard income is to be achieved, another valuation rule for stock items seems to be more apropriate, viz. the same rule that underlies the valuation of installed plant and equipment in the calculation of consumption of fixed capital. This rule amounts to valuation at replacement cost, the latter being defined as the current market price of comparable goods presently produced. Thus, the decline in the value of a piece of furniture should not be measured at its value in the second-hand market at the beginning of the period less that

at the end of the period; but, instead, as its physical decline over the period multiplied by the current price of a corresponding new piece of furniture. Similarly, damage done by flooding of a piece of land should not be measured as the decline in the value of the land in the real estate market, but as the value of the investment required to undo the damage.

Up to this point, we discussed the delineation of wealth at the highest possible level of aggregation, that of the world as a whole. At that level only the total value of physical wealth matters. However, as soon as a less aggregated level is considered, the issue is complicated by the need to attribute total wealth to specific groups of economic agents. The simplest disaggregation is that to the national level. Here the attribution problem could be sidestepped by employing a domestic concept: the total wealth, defined on the basis of the wealth boundary, on the economic territory of the country. If, however, we wish to define a constant wealth national income concept, the attribution issue has to be faced.

Essentially, this issue amounts to the question which part of the wealth on a country's territory is owned (in the sense of economic ownership) by residents of other countries and, vice versa, how much of the wealth in the rest of the world can be claimed by the nation's residents. In both cases, valuation should be at replacement value in the owning nation's own market prices, in order to achieve consistency with the standard national income concept. This way, a concept of national wealth is obtained that satisfies one of the basic national accounting principles: it has a precise physical interpretation. This interpretation is that it represents the amount of goods and intangible assets owned by the nation, the goods and intangible assets being within the production boundary and valued at the current market prices prevailing in the country concerned.

This national wealth concept also satisfies another basic national accounting principle: its physical interpretation is factual in the sense that it corresponds to a claim on the world's existing physical wealth. In contrast, the balance sheet in the UN guideline contains a lot of financial assets and liabilities that might be viewed as claims on future production. But then a lot of assumptions are needed to provide a physical interpretation of the claims: assumptions on future prices, on the future production of the debtors and creditors, and so on. The current series of debt crises of Latin America

shows how dangerous this type of interpretation can be.

Obviously, the concepts of national wealth and of constant wealth national income as formulated above are still theoretical. To render them fully operational a lot of work has yet to be done. In particular, it still has to be decided how the claims of residents on physical wealth abroad, and of non-residents on domestic physical wealth should be measured. There is no such thing as an international register of claims on goods. Instead linkages between credits and liabilities on the one hand and goods on the other are mostly indirect. Even if they are direct, as in the case of, e.g., corporate equity securities, there is no accurate correspondence between the value of the securities and the stocks of goods, equipment and buildings that they represent. Therefore, pragmatic rules have to be developed to attribute physical wealth to residents and non-residents, or, put differently, to determine the intrinsic value of credits and debits. The same thing applies for the sectoral distribution of wealth. Of course, the job is somewhat simplified if we just wish to measure constant wealth national income, since then only changes in wealth have to be measured and attributed to residents and non-residents.

Designing the rules involved is beyond the scope of the present paper, because the differences between domestic and national concepts are of secondary importance in assessing war damage. But the basic approach should be clear: wealth and constant wealth national income should not be defined from a monetary point of view, but the definition should be based on a precise delineation of the set of goods (and services) of which one wishes to establish the availability. Prosperity should be defined in real terms. This does not mean that there is no use for the monetary and similar non-real information currently included in the UN balance sheet and reconciliation account. Rushbrook and Wells (1987) provide good reasons for collecting this information and they do an excellent job of structuring it in an accessible and convenient way. But the traditional balance sheet and reconciliation account or any restructured version of them are rather alien to the current national accounts because of its lack of a wealth concept that is consistent with the current national accounts. Therefore, they are supplementary to the national accounts rather than an integral part or a direct extension.

4. A guesstimate of Dutch constant wealth national income, 1940-1945

4.1 Data collection

A part of the statistical information on the Dutch economy during the second world war is far more detailed and reliable than the data for either the pre-war period or the first decade after the war. This is due to the exceptional conditions prevailing at the time: the Germans occupying the country controlled the economy as strictly as possible. To this end they needed detailed and accurate data; to obtain these, they set up the necessary administrative systems. Thus the need for quantity rationing of consumption led to the generation of detailed quantity data; the attempted integration of Dutch production in the German war effort generated detailed data on production; the robbery of all types of goods could only be achieved if an adequate inventory of stocks was made.

These data were reported to the Central Bureau of Statistics, in addition to the data collected directly by the C.B.S. As a result, quantity data, in particular the technical coefficients they implied, were used in the construction of the first input-output table, for 1938, work on which was started during the war - by a number of prominent 'onderduikers' ('divers') who were hiding from the Germans in the CBS offices.

The data were also used to estimate the value of net national income at factor cost for 1940-1945. These estimates were published in 1950, with a breakdown by industry. Even before that time, however, interest in the economics of the war period had diminished as a consequence of the pressing need for adequate data for the post-war period. Consequently, no attempt was made to develop a full-fledged national accounting framework for the war period; instead the pre-war national income concepts were followed. One of the implications of this is that no elaborate constant price data were published, though the basic material to do this was available. Instead, just one constant price calculation was published: the national income series was converted into a volume index on the basis 1938=100, by means of an index of consumer prices. When, in the 1950's, more elaborate national accounting data and volume series were calculated for both the interwar period and the period from 1948 onwards, interest in the war-period was so marginal that it was skipped.

Until today, no revision of the 1940-1947 data has yet been attempted. The possibility is now being considered to revise them as part of the ongoing revision of the historical national accounting data that was initiated a few years ago; the first results of this revision, relating to 1921-1939, are presented in den Bakker, Huitker and van Bochove (1987). For the time being, though, the only available data on current national income are those published in 1950. Therefore, these will have to serve as our point of departure for the calculation of constant wealth national income.

As far as statistical information on war damage is concerned, the situation is much the same as in the case of the current economic process: there are a lot of detailed data; provisional macro-estimates were compiled immediately after the war; but thereafter interest diminished, and the provisional estimates were never revised to take account of the more comprehensive basic data that became available.

The detailed data on war damage were mainly obtained by the regional 'damage survey committees' that had been formed immediately after the beginning of the war, in order to assess the damage individuals and institutions had suffered, and to assign compensations. In a way, these committees were a continuation of a Dutch tradition dating back to the Dark Ages: even in the early fourteenth century independent committees were set up to decide on reparations for damage done in a war between the counties of Holland and Zeeland (cf. Nootenboom, 1950). The modern committees continued their work until long after the war. Claimants could, at their own initiative, report damage to these committees; the committees reported to the 'commissionar for war and defense damage' and later on to the 'commissariat for war damage' at the ministry of finance. In addition, data on damage were collected by other institutions, such as ministries. Summaries were reported to the C.B.S. The latter also collected damage data directly, particularly on that done in the 1940 bombing of Rotterdam and on the damage caused by flooding: in 1939/40 the Dutch government flooded some land as a defense measure; in 1944 the British flooded the isle of Walcheren in order to free the Scheldt river for traffic to Antwerp; and in 1945 the defeated Germans flooded a number of polders prior to surrendering.

Thus, by the late summer of 1945, a lot of detailed data were already available on the extent of war damage. The Ministry of Finance then provided provisional estimates of total war damage; these were published in the Memorandum submitted

to the Paris reparations conference. It was planned to revise these data after the conference, in order to substantiate them further, on the basis of the data that continued to come in from the 'damage survey committees'. This work was actually started at the CBS, but when it became evident, by the end of 1946, that no reparations would be forthcoming, the project was abandoned: the manpower was badly needed for the development of the system of national accounts as well as for staffing the new Central Planning Bureau.
As a consequence of this, the only available aggregate data on damage are those in the Memorandum. For the purpose of illustrating the concept of constant wealth national income these are sufficient. But it should be borne in mind that the resulting values are based, first, on current national income data that are conceptually inconsistent with the present national accounts and, second, on damage data of a provisional nature. Consequently, the constant wealth national income calculation yields results that are a mixture of true estimates and educated guesses.

4.2 The calculation

The computation of constant wealth national income is greatly simplified if it is done at constant prices: then revaluations play a more modest role than in case of current price calculation. Naturally, they do not drop out of the calculation entirely. Thus, in case of nominally fixed assets and liabilities vis-a-vis the rest of the world, exchange rate changes affect their intrinsic value measured in constant prices and at constant exchange rates. For lack of data we have to ignore these in our 1940-1945 computation. This leaves us with the following scheme:

Gross national income at market prices	(1)
less obsolescence of and damage to fixed capital	(2)
less obsolescence of and damage to consumer durables and valuables	(3)
less decrease in stocks of non-durables held by households and government (net)	(4)
plus natural growth less depletions	(5)
less obsolescence of and damage to infra-structural works	(6)
less termination of purchased intangible assets	(7)
plus net change in intrinsic value of net equity in the wealth of the rest of the world	(8)

plus net change in intrinsic value of existing financial assets and liabilities vis-a-vis the rest of the world (9)

equals constant wealth national income (10)

As noted above, for the 1940-1945 period only net national income at factor cost is available. In 1938 prices it is given in table 4.

Table 4 Net national income at factor cost, 1940-1945, in 1938 prices

	Millions of guilders
1940	4534
1941	4293
1942	3923
1943	3830
1944	2570
1945	2629
1940 - 1945	21779

The last line of table 4 shows the total for the whole period. Since the war damage data are not broken down according to the year the damage occurred, this total has to be our point of departure. As a first step in the computation, it has to be converted to a gross figure, valued at market prices. To obtain a guesstimate of the latter, we add consumption of fixed capital that has been implicitly employed in arriving at the net national income and indirect taxes less subsidies, assuming that the 1938 ratios of these to net national income at factor cost hold.[4] This yields

Guesstimate of indirect taxes less subsidies	2093
Guesstimate of implicit consumption of fixed capital	2286

In addition to these items a correction has to be made for exceptional changes

in producers' stocks. The estimation procedure followed in computation of value added for 1940-1945 can, in principle, be considered as a direct estimation of the value added in current production. Thus, in principle, value added includes the ordinary changes in stocks caused by sales or use in the production process, but not the exceptional ones caused by destruction and looting of stocks. Conceptually, these should be taken account of in current national income. The war damage Memorandum gives the following data

Damage to and diminution of stocks (at 1938 prices)	
in industry	1000
in commerce	1400
in agriculture[5]	37
TOTAL	2437

Another correction that has to be made concerns current production that was forcibly removed to Germany during the war. This should be treated as an income transfer. The Memorandum estimated its value at 6000 million. As a consequence we now obtain:

Guesstimate of gross disposable national income at 1938 market prices, 1940-1945	17721 (1)

The first item in the chain from current to constant wealth national income is obsolescence of and damage to plant and equipment. As for damage, the memorandum provides data that aggregate damage and maintenance not carried out, as well as, in some cases, damage to infra-structure and land. Employing some heroic assumptions, these may be separated. The resulting estimate of maintenance not carried out seems to be a good approximation of obsolescence. Fortunately, the basis of valuation of damage in the Memorandum approximates the valuation of market prices of corresponding new goods rather closely. This valuation method is the one we advocated in section 3.

Thus we obtain:

Damage to plant and equipment (including dwellings)	2500
Obsolescence to plant and equipment	1550
TOTAL	4050 (2)

The next two items in the current to constant wealth income chain is damage to and obsolescence of consumer durables and changes in stocks of durables (held by non-producers). These two items cannot be separated. The Memorandum data for the items (after correction for motor cars held by households, which the memorandum dealt with elsewhere), and after addition of half the loss of valuables[6] is: 1620 (3, 4)

No separate estimates for natural growth less depletions, and obsolescence of and damage to infra-structural works (including floodings) can be distilled from the memorandum. The total for these two items can be estimated at 780 (5, 6)

There are no data on item 7 (termination of intangible assets). As to items 8 and 9, the memorandum provides data on the loss of monetary gold and foreign currency; however, part of this was caused by expenditures of the government in exile. Conceptually, these should not be considered as loss of income, since the expenditure generated government production, which is included in the current national income. The loss of monetary gold was partly due to the looting of the central bank. But part of the monetay reserves lost this way were returned after the war. To avoid overstating the damage done in 1940-45, we therefore omit the loss of monetary reserves entirely. But the memorandum also covers two items which should be included in constant wealth income: confiscations by the Germans of foreign securities held by Dutch nationals (500 million) and damage to Dutch investments in central Europe (again 500 million). Naturally, there is no way to determine the intrinsic values of either of these two holdings. To avoid, once more, overstating damage, we value them at one half of their nominal value 500 (8,9).

Consequently we now have as our guesstimate:

Constant wealth national income, 1940-1945 10771 (10).

Thus the constant wealth national income was only some 60% of current national income. Naturally, this figure is just a very crude estimate. A more comprehensive and detailed analysis of the available data may alter it considerably. Moreover, the estimate is conservative, because only the damage due to the war in Europe has been included, not that due to the war in the

Pacific. In addition, a number of non war related items that cause constant wealth national income to differ from standard national income have not been included because of lack of data. Even so, this exercise is quite sufficient to show that in periods of crisis and disaster there may be a very considerable gap between the current national income as traditionally defined on the one hand, and the actual availability of goods and services, or 'prosperity', on the other.

Notes

(1) We are grateful to the official historian of 'The Kingdom of the Netherlands in the Second World War', Professor L. de Jong, for showing us his draft of Chapter Three of Part XII (Epilogue), which covers, i.a., war damage. We have used this draft as background material to sections 2 and 4. Naturally, only we are to blame for errors.

(2) This section draws on two types of material from the C.B.S. archives: the official memoranda submitted by the various governments to the conference, and on reports Professor Derksen of the C.B.S. wrote after the conference; both sources have been found in the C.B.S. archives.

(3) The exception being that of owner-occupied dwellings, where a 'what if' situation is involved. For this reason, a number of authors, including one of the present ones, have advocated to remove this imputation from the core of the national accounts, along with similar 'what if' constructions.

(4) More precisely, the consumption of fixed capital as it was calculated implicitly in the original national income estimate has to be added. Cf. (for 1938) table 2.1 of Den Bakker, Huitker and Van Bochove (1987).

(5) Damage to stocks and equipment is 75 million. Applying the ratio of the two types of damage in industry (one over one) yields 37.

(6) These valuables consist mainly of jewellery and paintings. They have been valued at 1938 market prices. Part of them was returned later on; hence, only one half of the value indicated in the memorandum has been included.

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NA/01 *Flexibility in the system of National Accounts*, Eck, R. van, 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 the "Blue Book", and the organization of a flexible system starting from a core that is easier to understand than the 1968 SNA.

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

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

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

NA/05 *The use of chain indices for deflating the National Accounts*, Al, P.G., B.M. Balk, S. de Boer and G.P. den Bakker (1985)
This paper is devoted to the problem of deflating National Accounts and input-output tables. This problem is approached from the theoretical as well as from the practical side. Although the theoretical argument favors the use of chained Vartia-I indices, the current practice of 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*, Bochove, C.A. van and H.K. van Tuinen (1985)
This paper examines the purposes of the SNA and concludes that they frequently conflict with one another. Consequently, the structure of the SNA should be made more flexible. This can be achieved by means of a system of a general purpose core supplemented with special modules. This core is a full-fledged, detailed system of National Accounts with a greater institutional content than the present SNA and a more elaborate description of the economy at the meso-level. The modules are more analytic and reflect special purposes and specific theoretical views. It is argued that future revisions will concentrate on the modules and that the core is more durable than systems like present SNA.

NA/07 *Integration of input-output tables and sector accounts; a possible solution*, Bos, C. v.d. (1985)
In this paper, the establishment-enterprise or company problem is tackled by taking the institutional sectors to which the establishments belong into account during the construction of input-output tables. The extra burden on the construction of input-output tables resulting from this approach is examined for the Dutch situation. An adapted sectoring of institutional units is proposed for the construction of input-output tables. The proposed approach contains perspectives on further specification of the institutional sectors,

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

NA/08 *A note on Dutch National Accounting data 1900-1984*, Bochove, C.A. van (1985)
This note provides a brief survey of Dutch national accounting data for 1900-1984, concentrating on national income. It indicates where these data can be found and what the major discontinuities are. The note concludes that estimates of the level of national income may contain inaccuracies; that its growth rate is measured accurately for the period since 1948; and that the real income growth rate series for 1900-1984 may contain a systematic bias.

NA/09 *The structure of the next SNA: review of the basic options*, Bochove, C.A. van and A.M. Bloem (1985)
There are two basic issues with respect to the structure of the next version the UN System of National Accounts. The first is its 'size ': reviewing this issue, it can be concluded that the next SNA must be 'large ' in the sense of containing an integrated meso-economic statistical system. It is essential that the next SNA contains an institutional system without the imputations and attributions that pollute present SNA. This can be achieved by distinguishing, in the central system of the next SNA, a core (the institutional system), a standard module for non-market production and a standard module describing attributed income and consumption of the household sector.

NA/10 *Dual sectoring in National Accounts*, Al, P.G. (1985)
The economic process consists of various sub-processes, each requiring its own characteristic classification when described from a statistical point of view. In doing this, the interfaces linking the sub-systems describing the individual processes must be charted in order to reflect the relations existing within the overall process. In this paper, this issue is examined with the special refernce to dual sectoring in systems of National Accounts. Following a conceptual explanation of dual sectoring, an outline is given of a statistical system with complete dual sectoring in which the linkages are also defined and worked out. It is shown that the SNA 1968 is incomplete and obscure with respect to the links between the two sub-processes.

NA/11 *Backward and forward linkages with an application to the Dutch agro-industrial complex*, Harthoorn, R. (1985)
Some industries induce production in other industries. An elegant method is developed for calculating forward and backward linkages avoiding double counting. For 1981 these methods have been applied to determine the influence of Dutch agriculture in the Dutch economy in terms of value added and labour force.

NA/12 *Production chains*, Harthoorn, R. (1986)
This paper introduces the notion of production cains as a measure of the hierarchy of industries in the production process. Production chains are sequences of transformation of products by successive industries. It is possible to calculate forward transformations as well as backward ones.

NA/13 *The simultaneous compilation of current price and deflated input-output tables*, Boer, S. de and G.A.A.M. Broesterhuizen (1986)
This paper discusses a number of aspects of the procedure according to which input-output tables are compiled in the Netherlands. A few years ago this method underwent an essential revision. The most significant improvement means that during the entire statistical process, from the processsing and analysis of the basic data up to and including the phase of balancing the tables, data in current prices and deflated data are obtained simultaneously and in consistency with each other. Data in current prices first used to be compiled and data in constant prices and changes in volume and prices used to be estimated only afterwards. With the new method the opportunity for the analysis of the interrelations between various kinds of data, and thus better estimates is used.

NA/14 *A proposal for the synoptic structure of the next SNA*, Al, P.G. and C.A. van Bochove (1986)

NA/15 *Features of the hidden economy in the Netherlands*, Eck, R. van and B. Kazemier (1986)
This paper presents survey results on the size and structure of the hidden labour market in the Netherlands.

NA/16 *Uncovering hidden income distributions: the Dutch approach*, Bochove, C.A. van (1987)

NA/17 *Main national accounting series 1900-1986*, Bochove, C.A. van and T.A. Huitker (1987)
The main national accounting series for the Netherlands, 1900-1986, are provided, along with a brief explanation.

NA/18 *The Dutch economy, 1921-1939 and 1969-1985. A comparison based on revised macro-economic data for the interwar period*, Bakker, G.P. den, T.A. Huitker and C.A. van Bochove (1987)

NA/19 *Constant wealth national income: accounting for war damage with an application to the Netherlands,1940-1945*,Bochove, C.A. van and W. van Sorge (1987)

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

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

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

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

NA/24 *On the adjustment of tables with Lagrange multipliers*, Harthoorn, R. and J. van Dalen (1987)
An efficient variant of the Lagrange method is given, which uses no more computer time and central memory 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.

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