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HOW TO TREAT BORROWING AND LEASING IN THE NEXT SNA

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Abstract

The treatment of banking and leasing services in the production accounts of industries and in input-output tables is subject of a lively discussion. Here, it is argued that this service is largely not an input into a production process, but an input into a financing process, which is not recorded in the production accounts. In fact, the use of "pure" financial intermediation services related to borrowing bears no relation whatsoever to the output generated by specific production activities. Moreover, only enterprise-type units can incur liabilities, so that interest payments can at most be allocated among institutional sectors. Considering households with own account workers, for instance, it cannot generally be established for which purpose (consumption, production) credits have been used.

On theoretical grounds, only services provided by banks related to the handling of payment flows might be allocated to the users. However, estimating these services separately may lead to highly arbitrary results. Moreover, it should be realized that if indirectly paid banking services are imputed to the users in the production accounts, the concept of interest income and even of (national) income in general in the income accounts must be amended too. The result will deviate from the perception of all economic actors. For instance, household income (and consumption expenditures) would then be augmented by the imputed service charges related to their interest received on current account deposits.

Summarizing, the use of services related to borrowing money, financial leasing of capital goods, and renting land cannot be distributed over intermediate and final demand, let alone that they can be considered as intermediate input into specific production processes. Even their imputation to institutional sectors has some adverse effects. As a consequence, the proposals in this paper entail that the way of recording the use of financial services in the present SNA remains largely intact.

Contents

1. Introduction

In the production accounts of the United Nations' System of National Accounts (SNA) [1968], establishments are classified into industries which are engaged in the same kind of economic activities. This taxonomy serves, among other things, to create groups of establishment-units which are relatively uniform with respect to the applied technology. In other words, the relationship between the inputs used and the output produced should be rather similar for all units classified into a particular activity. Typically, a production process involves a physical combination of inputs in correct proportion such that a specific output results. This principle lies at the root of input-output analysis, the production block in general equilibrium models and even production theory in general.

In the draft revised SNA chapter on Production Accounts for Industries and the Input-Output tables, it is mentioned (paragraph 3) that ".. The activities themselves may be described and classified by reference to three characteristics, namely:
- the goods and services they produce as outputs;
- the intermediate and primary inputs they consume;
- and the actual techniques of production itself."

No reference is made to the financial situation of the enterprise to which the establishment to be classified belongs. This is correct since approximately the same technology may be applied irrespective of the way inputs have been financed. In fact, the decision to use financial intermediation services in obtaining funds mainly depends on the liquidity position of the owner and has nothing to do with the production process in which he is engaged. This is precisely the reason why the production account and income accounts have been separated.

Moreover, on the one hand only enterprise-type units can incur liabilities and pay for any intermediation services which that may entail. On the other hand, it is well known that a classification of production units at the level of the enterprise would yield a very heterogeneous grouping as far as production technology is concerned. As

a consequence, "dual actoring" is recommended in the SNA.

The notion that the financing of inputs is unrelated to their physical combination in order to generate a certain output, must be pursued in the treatment of borrowing and leasing by industries in the production accounts. Depending on the financial strength of the enterprise and under the influence of tax regulations, the purchase of inputs is paid with borrowed or own money. Concerning the input of capital goods and land, there is the additional possibility of operating and financial leasing for the former and renting for the latter. In all cases, it applies that financial arrangements are not inherent to certain production activities.[1)]

As a consequence, the use of intermediation services related to borrowing money, financial leasing of capital goods, and renting land should not be considered as intermediate inputs into specific production processes.[2)] Instead, these financial arrangements must be shown as flows between institutional sectors in the income appropriation account. When discussing the implications for the national accounts, it is expedient to distinguish between three categories of financial arrangements: 1) use of financial intermediation, 2) leasing of capital goods, and 3) renting land.

1) Evidently, some similarity exists with hiring the services of a professional agency instead of employing the professional. However, a fundamental difference is that that is related to a "make or buy" choice which involves production organization decisions rather than financing decisions. The latter type of decisions prevails in the case of a "purchase or lease" choice. Although controlling financial flows is one of the most typical tasks which tend to be centralized within an enterprise, there may be other decisions on the use of inputs which are not delegated to the establishment level (e.g. on insurance). However, one may assume that the use of those other inputs is at least to some extent related to the kind of production (process) in which the establishment is engaged.

2) In as far as banks also perform various handling services other than "pure" financial intermediation for which they do not charge directly, a meaningful indicator can perhaps be found to allocate this output to various users. This is worked out below.

2. Financial Intermediation

Concerning the intermediation services related to borrowing money, its recording in the present SNA - and in Eurostat's European System of Integrated Economic Accounts (ESA) [1978] - is, to a large extent, the correct way. In the production accounts, this output and value added of financial institutions should indeed be incorporated, since a productive service is rendered (channelling money is more or less analogous to trade - including storage - of goods).[3] The main problem is that this service is not an input into a production process, but an input into a financing process which is not recorded in the production accounts.

As a consequence, those indirectly paid banking services (also called imputed service charges) related to intermediation for borrowers must be shown, perforce, as intermediate consumption of a nominal (dummy) industry. This nominal unit has a zero output, negative value added and operating surplus, and negative property outlays in the appropriation of income account.

Various other reasons can be given why intermediation services related to borrowing money should not be allocated to the users in the production accounts and in input-output tables. First, the enterprises which make use of borrowed funds, view interest as a payment which must be settled after all money outlays incurred directly in carrying on the operations of the firm (intermediate inputs, wages etc.) have been taken into account. In other words, most actors concerned perceive that these charges are part of their gross profits, just like depreciation and taxes (cf. the business accounting definition of gross profits given in Bannock et al. [1984]).[4] This in itself is already a good reason for

3) A separate aspect, not discussed here, is what to incorporate in the output of bank services. Pending questions relate to e.g. income from the investment of own funds, losses on bad debts, and the position of the Central Bank (cf. Broderson et al. [1989] and Rymes [1989]).

4) In the production accounts for institutional sectors, it is thus recommended to subdivide operating surplus into net (total) interest payments, land rents, gifts, depreciation and net profits. In this way, the business accounting concepts of profits would also become visible in the national accounts.

not treating (part of) interest payments as an intermediate input into specific production activities in the national accounts (refer to van Bochove and van Tuinen [1986] for the core principles of national accounting).

Secondly, if indirectly paid banking services are already allocated to the users in the production account, also the concept of interest income, and of (national) income in general, in the income accounts is going to deviate from the perceptions of economic actors. Interest received must then be augmented with an imputed service charge (as paid in the production account) and interest paid must be reduced by the imputed service charge (then already settled in the production account). For instance, household income (and consumption expenditures) would then be augmented by the imputed service charges related to their interest received on current account deposits. It goes without saying that households have no idea of this "income" component. Evidently, it is awkward if a national accounts concept of (interest) income refers to transactions which no single economic actor records as such.

Thirdly, by not considering indirectly paid banking services as an input in ordinary production processes, consistency is maintained with the (opportunity) costs for the generation of funds from another production activity within the same enterprise or from another enterprise which is not included in the banking industry (e.g. a pension fund). Those costs are also not booked as (imputed) payments for banking services in the production accounts.

Finally, input-output analysis is blurred if these services are not put in a separate column (so that they can be ignored for many purposes). Not only the assumption of fixed input-output coefficients is absurd in this case (if anything, higher sales may lead to <u>less</u> use of financial intermediation services), but also there exists at most a partial relationship between output generated in a given year and that year's use of financial intermediation services (since a large proportion of the loans is used for purchasing capital goods). Besides, the influence of relative price changes on the amount of financial intermediation services needed is atypical. An increase in the price of

any input into a certain production activity may imply that an additional amount of money must be borrowed. Accordingly, the volume of the banking input would then increase without a change in the output volume of the activity using this input.

From the above, it is clear that total interest payments should not be recorded as inputs of non-factor services into specific industries (as proposed by Sunga [1989]). However, a convention to allocate only the imputed service charges to intermediate input costs and to leave the rest of interest paid in the operating surpluses, to be settled in the income appropriation account, is even more cumbersome.[5] No single actor in the economic process will perceive the rationale for this split. Moreover, any relationship between that part of interest payments and output produced is only coincidental. An additional complicating factor is that the quotient of the imputed service charges and total interest payments varies with the amount of interest received by deposit-holders and such.

An example may serve to illustrate this point. Suppose that output in a certain industry increases. Even if this would imply that these establishments borrow accordingly more money and start paying accordingly more interest already in the same period, it is still unthinkable that as a consequence account-holders will deposit accordingly more money in their banks, without a change in interest rates (account-holders will certainly not be "demand-constrained"; they have already deposited whatever they wanted at the prevailing interest rate). So if banks still have some slack in the amount of funds they can lend (in accordance with a common assumption in Input-Output analysis), the imputed service charges (banking output) will increase much more than a computation on the basis of a fixed input coefficient for banking services would suggest.

A next question concerns the allocation of the imputed service charges to intermediate versus final demand. This is not a trivial matter, since only the latter part is included in Gross Domestic Product.

5) Refer to the overview of proposals for the revised SNA by Harrison [1989] and by the Inter-secretariat Working Group on National Accounts [1990].

It has been suggested to allocate all indirectly paid banking services to final expenditures. This registration however, implies double-counting and leads to an over-estimation of GDP. Total interest paid by industries is then still left in their operating surpluses, while on the other hand the imputed services charges' part of those interest payments is also received by banks. That is why a negative value added correction in the nominal industry is needed.

Thus one could argue that at least part of the indirectly paid banking services should be considered as intermediate costs of the nominal industry. For an evaluation of the significance of the part consumed by final users, a clear delineation of indirectly paid banking services is required. Following Broderson et al. [1989], the value of these services is identified as "..the difference between the market interest rate and the actual interest (rate) paid / received for each individual loan or deposit by banks", summed over the face-value of all loans and deposits.

Let us first consider the point of view of account-holders. It is clear that a real service is rendered to the customers in this case (safe-guarding their funds and facilitating their monetary transactions), and that this service is provided at a cost (think of the typically higher interest rate earned on accounts which allow transactions with only one, or at most a few other accounts). Sometimes, the account-holders are explicitly charged, e.g. for the use of cheque-books. Those directly paid banking services do not pose a problem and must evidently be recorded as consumption of banking services by various industries, households and such. In principle, part of the imputed payments might also be allocated on the analogy of these actual settlements. However, that would require detailed information on the number and kind of handling services provided to all kinds of customers. It is doubtful whether collecting such information is statistically feasible at the moment.

Nevertheless, most of the indirectly charged costs relate to "pure" financial intermediation. A safe choice for a multi-purpose accounting system like the SNA is therefore not to impute an artificial

payment, if it can be avoided. There exists an analogy with the output allocation of distributive trade services and transport margins. It goes without saying that both producers and purchasers (including households and other final users) benefit from these services. However, instead of advocating an (arbitrary) split of this output, SNA has adopted the convention to consider it completely as an intermediate input into the production process. Evidently, final consumers ultimately pay for these services through higher prices. This applies to the imputed financial intermediation charges as well.

However, if one still wants to allocate indirectly paid banking services to both depositors and borrowers, the following procedure could be adopted. First, those financial institutions are selected which do not generally supply credits to individual businesses (e.g. savings banks, post office giro). It may safely be assumed that the bulk of their services is enjoyed by the depositors. Hopefully, it is then possible to separate private accounts from company accounts. The next, difficult step is the determination of a "market" interest rate for the various kinds of deposits. In view of the enormous variety in conditions imposed (e.g. payable at call or at some term of notice, or payable at call up to a certain amount or with some fine; minimum or maximum deposited amounts), this is not an easy task. An additional problem is that interest rates may differ even for a single type of account within the same bank. This occurs when part of the funds was deposited several years ago at conditions which do not change until the maturity date, while these conditions have changed in the mean time. This implies that even the history of these deposits must be kept.

Suppose that it is feasible to compute the spread between the actual interest rate received and a "pure", market interest rate for all kinds of deposits. It may be reasonable to assume that this difference is roughly the same for accounts in those banks which cater for large groups of both depositors and borrowers, so that the share of imputed banking output to be allocated to depositors can be estimated for those financial institutions as well. Subsequently, this part of output can be assigned to the users, since the services provided by the banks to depositors do not fundamentally differ from the storage and transport of commodities.

Depending on the preferred line of reasoning, however, all or part of indirectly paid banking services will be allocated to the borrowers. Disregarding monetary flows crossing the border for the moment, it could be maintained that in a longer-term equilibrium situation, almost all loans will be used to finance inputs into productive activities.[6] Only by producing something, enough money can be earned to pay back the debt. This even applies to the government. Therefore, viewing all payments for indirectly paid banking services, made by borrowers, as intermediate input costs (allocated completely to a nominal industry) may not involve a major distortion of reality.[7] Besides, there is the obvious advantage of simplicity.

Again, some may find this view too extreme. An alternative approach classifies the spread on all interest paid on credits to households as final demand and the rest as intermediate demand. This solution assumes that households use all credits, including own-account business loans and money raised on a mortgage, for consumption. Obviously, final demand for banking services will now be overestimated. Besides, this convention presupposes that one is able to find a "pure", market interest rate for all kinds of credits supplied to various institutions with diverse types of collateral. Analogous to the case of deposits, a large part of the loans may have been incurred in the past, at conditions which are fundamentally different from those prevailing in the reference year. In as far as those loans are not tradable, establishing a presently valid "market" interest rate for them is not a straightforward operation.

This brings us to the issue of international trade in banking services. Normally, even intermediate products are classified as final demand as soon as they are exported. However, in this case, the convention is that "..flows of property income, such as interest, dividends or royalties, between residents and non-residents are excluded from international trade in services." (draft revised SNA-chapter on Final Expenditures, paragraph 201). This is in accordance with the IMF

6) A (relatively insignificant) exception concerns credits which are used for the purchase of (durable) consumer goods.

7) Refer also to the interpretation given by Broderson et al. [1989] in their last paragraph.

Balance of Payments Manual, which considers all interest receipts as investment income.[8] Possibly, this convention was also adopted to avoid the problem of having to disentangle indirectly paid banking services paid and provided by residents and non-residents respectively. Moreover, a possible error in the computation of GDP caused by the exclusion of banking services indirectly paid and provided by foreigners is corrected when estimating national income (by subtracting, among other things, net total interest payments to abroad from GDP).

Apparently, it was felt in the expert group meetings reviewing the SNA that the present treatment would "be particularly unsatisfactory for those countries which have large international payments and receipts of interest.."[Harrison, 1989]. This is indeed correct if one would insist in using GDP as the main indicator to compare the financial strength of countries (or institutional sectors). However, the pay-out capacity of countries is much better determined on the basis of (disposable) national income. Thus, instead of clouding GDP measurement with artificially computed elements, one should use a different national aggregate concomitant with the purpose of international comparison in this case.[9]

If one insists in some estimation of a non-factor service part of these flows, a similar procedure as in the case of domestically provided, indirectly paid banking services could be adopted. In practice, a careful assessment of the spread between the (international) market interest rates and the percentages due on all kinds of loans and deposits will be even more complicated.

In conclusion, an attempt to allocate indirectly paid financial intermediation services to users may create more problems than it

8) Since harmonization with related systems in general and with the IMF system on balance of payments statistics in particular is an important objective of the SNA revision, it is perhaps worth noting that the treatment of international interest payments proposed here (wholly viewed as property income) is in line with the IMF prescriptions.

9) Refer to Bos [1989] for a more elaborate treatment of the issue that various concepts of income are needed, in order to serve different purposes of measurement.

solves. Perhaps, it is possible to distinguish, by approximation, a part which should be assigned to depositors from a part which should be assigned to borrowers. On the depositors side, less conceptual problems exist with allocating the imputed costs to the users in the production accounts. However, one should realize that by doing this the concept of interest receipts in the income appropriation account will have to be adjusted as well, and that the new concept will generally not concord with the views of the users of national accounts.

On the borrowing side, the use of this service has nothing to do with the production process as such and it should therefore not be allocated to the borrowers in the production accounts. Moreover, only enterprise-type units can incur liabilities so that allocation to functions (intermediate demand versus consumption) and to establishment units is not possible, in principle. In fact, there are several additional objections which have been listed above.

In view of these complications, the present convention to allocate everything to a notional industry in the input-output table seems a defensible and straightforward option.[10] In the production accounts for the institutional sectors, it is recommended to distinguish net (<u>total</u>) interest payments as a separate sub-category of gross operating surplus.[11]

10) In this respect, there exists an analogy with the way of recording charges in exchange for some government services like refuse collection. These are also not distributed over users in the production account.

11) Even for institutional sectors it may not always be feasible to distinguish between interest payments related to domestic production and interest payments related to other investments (e.g. a take-over of a foreign firm).

3. Leasing Capital Goods and Renting land

Concerning the (financial) leasing of capital goods (including buildings), roughly the same line of reasoning applies. The decision to purchase or to lease on a long-term contract is not inherent to the production activity concerned and depends instead on financial considerations (and tax regulations). This does not apply to the case where the lessor provides various other services (e.g. maintenance of the equipment), or when the lessee "..require(s) certain types of equipment only intermittently" (draft revised SNA-chapter on the Production Accounts, paragraph 92). The draft quoted here labels these activities operating leasing, to be distinguished from financial leasing. In my opinion, all costs of such operating leasing should still be allocated to the users, in accordance with current practice.

Financial leasing is a different matter. The lessee rents the equipment over the whole of the expected service life of the equipment or obtains the property right at the end of the contract. He maintains the capital good and carries all risks of breakdown. The rent consists of three elements: redemption, "pure" interest and a service charge of the leasing company. It is clear that only the last of these elements belongs in the production accounts and in input-output tables (on the analogy of financial intermediation services). This output should be assigned as intermediate costs of the nominal industry with a negative operating surplus to be settled in the income appropriation account (cf. also foot-note 1).

Applying the split between operating leasing and financial leasing to capital goods which are rented by final demand categories yields an interesting perspective. First, it is obvious that when a family rents a house, this is to be considered as operating leasing consumption. Usually, the tenant can give notice of removal at any time and the landlord is responsible for maintenance.

The situation is different, however, in the case of owner-occupied housing. Now the consumer is the one who runs the risk of a financial or physical breakdown of the dwelling and who cannot "terminate" the

contract at his own free will.[12] Therefore, this should be seen as financial leasing consumption. In case that the owner also provides the funds for the purchase of the house, it is doubtful whether any service charge is earned. If the money is raised on a mortgage, the service charge collected by the bank should be considered as output of financial leasing services. This way of recording also obviates the need for an imputation of owner-occupied housing. Nevertheless, another logical consequence may be that household consumption should now include an item "depreciation of owner-occupied housing" (and possibly depreciation of other consumer durables as well) which is then supplied by a production activity with the same name.[13]

Those who recoil from these implications, may continue to book owner-occupied housing as operating leasing (recording the "full" imputed rent). In any case, the service charge earned on money raised on a mortgage by households is part of intermediate input to be allocated to the nominal industry (refer to the end of the second paragraph of this section).

Concerning the last-mentioned category, land rents, it seems most

12) Considering an occupier as if he has the same flexibility and bears not more responsibility than a tenant gives the impression of moulding reality on the statistical framework instead of the other way round. Not to mention the measurement problems involved in estimating imputed rents and in separating maintenance of owner-occupied housing (intermediate input) from minor repairs to furniture (final consumption).

13) This somewhat artificial construction is also no longer necessary if one does away with the double-counting of value added generated in the production of capital goods. First, the whole value is allocated to final demand (investment). Next, in subsequent years, the consumption (deterioration) of this stock is not subtracted from value added. This problem does not occur if only Net Domestic Product is considered as a suitable aggregate indicator of economic activity, or if investment is booked as intermediate input into a subsequent year in an inter-temporal accounting system (cf. Hulten [1979]).

consistent to treat these in the same way as financial intermediation.[14] Distinguishing an economic activity land rental (possibly combined with financial leasing of capital goods) has the additional advantage that the artificial re-routing of the costs involved (cf. SNA, paragraph 6.47) to the user of the land becomes superfluous. As a minimum, the output of the intermediation services should be equated to the costs incurred (including possible taxes on the use of land paid by the owner, rent collection costs and, perhaps, some maintenance costs, but of course excluding the "pure" land rent).

Here, all output can be allocated to the nominal industry, so that total rent payments are settled in the income appropriation account. This is in accordance with current practice.

Summarizing, all cases discussed in this paper involve payments which consist partly of "pure" property income flows and partly of compensations for rendering a non-factor service. The latter part belongs in the production accounts, while the former part must be settled in the income appropriation accounts. However, economic actors only perceive the total and will act accordingly. Moreover, artificially allocating a separate imputed margin to "users" will distort the usefulness of production accounts for industries and the input-output tables in many ways.

A split of the economic process in various sub-processes, like production, (primary and secondary) income distribution etc. is always somewhat artificial. Nevertheless, this distinction is made in the national accounts and for good reasons. Then, the existence of a "nominal" (dummy) industry in the production accounts is a price which has to be paid for not wanting to record all transactions in one type of account.

14) The main reason for treating land rental not as a commodity-type service seems to be that land is a non-reproducible asset. However, making land available to others is in itself a productive (intermediation) service. Moreover, money ("waiting") is basically non-reproducible as well, so there exists an analogy between the activities financial intermediation and renting out land. Notice also some similarity with the work of labour dispatch services.

Literature

Bannock, G., R.E. Baxter and R. Rees, 1984, Dictionary of Economics, Third Edition, Middlesex, Penguin Books.

Bos, F., 1989, A Systems View on Concepts of Income in the National Accounts, paper presented at the 21st IARIW Conference, Lahnstein, West Germany, 20-26 August. National Accounts Occasional Paper No. NA/33, Voorburg, Netherlands Central Bureau of Statistics.

Brodersen, S., E. Dalgaard and B. Thage, 1989, On the Measurement and Distribution of Indirectly Paid Bank Services, paper presented at the 21st IARIW Conference, Lahnstein, West Germany, 20-26 August.

Eurostat, 1978, European System of Integrated Economic Accounts ESA, Second Edition, Luxembourg, The European Communities.

Goldberg, S.A., 1985, The Treatment of Interest in the National Accounts, paper presented at the 19th IARIW Conference, Noordwijkerhout, the Netherlands, 25-31 August.

Harrison, A., 1989, Major Changes Proposed for the Revised SNA: An Overview, paper presented at the 21st IARIW Conference, Lahnstein, West Germany, 20-26 August.

Hulten, C.R., 1979, "On the "Importance" of Productivity Change", in American Economic Review, Vol. 69, No. 1, pp. 126-136.

International Monetary Fund, 1977, Balance of Payments Manual, Fourth Edition, Washington, IMF.

Inter-secretariat Working Group on National Accounts, 1990, System of National Accounts (SNA) Review Issues, discussion paper for 1990 Regional Commissions meetings on SNA, New York, United Nations Statistical Office.

Rymes, T.K., 1989, On International Trade in Banking Services, paper

presented at the 21st IARIW Conference, Lahnstein, West Germany, 20-26 August.

Sunga, P.S., 1989, Income and Other Issues in Restructuring of the SNA, paper presented at the 21st IARIW Conference, Lahnstein, West Germany, 20-26 August.

United Nations Statistical Office, 1968, A System of National Accounts, Studies in Methods, Series F, No. 2, Rev. 3, New York, United Nations.

van Bochove, C.A. and H.K. van Tuinen, 1986, "Flexibility in the Next SNA: the Case for an Institutional Core", in The Review of Income and Wealth, Series 32, No. 2, pp. 127-154.

Available 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 colunms 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. 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**, 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 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).
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**, 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 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.

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).

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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**, Ouddeken, 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, forthcoming).
Translation of the inventory report submitted to the GNP Management Committee of the European Communities.

NA/36 **The registration of processing in make and use tables and input-output tables**, Bloem, Adriaan M., Sake De Boer and Pieter Wind (1990, forthcoming).
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.

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 valuations principles.

NA/38 **Net versus gross National Income**, Bos, Frits (1990, forthcoming).
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.

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