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THE USE OF NATIONAL ACCOUNTS IN ECONOMIC ANALYSIS

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I. INTRODUCTION

SINCE the idea of national accounting first took shape in the early forties, national accounts have been constructed for a good many countries. At the same time a great deal has been published on problems connected with the construction of the accounts such as the design of national accounts systems, the definitions to be used, the valuation and estimation of individual items in the accounts, and the construction of volume and price index numbers.

Comparatively little has been written, however, about the use that can be made of national accounts statistics in economic analysis. This may seem rather surprising, for it was primarily with that use in mind that national accounts have been constructed.

So far as economic analysis in the form of econometric model building is concerned, for which the national accounts would seem to be particularly well suited, the explanation is undoubtedly that econometric model building requires:

(i) longer time-series than are at present available, and
(ii) time-series which are not, like the series of post-war national accounts data, strongly affected by extraordinary phenomena (such as post-war reconstruction, the Korean war, the 1949 devaluations, etc.), which tend to obscure the underlying economic relationships.

Besides this type of economic analysis, which aims at explaining what has happened in quantitative form and in terms of cause and effect, there is the more modest type of analysis which is concerned mainly with what might be called intelligent fact-finding. The scantiness of the literature even in this field may perhaps be explained by the fact that national accounts statistics are generally presented in such a form that many of their analytical implications are rather apparent. Nonetheless, I think, there are at least a few less obvious uses of national

accounts statistics to which attention should be drawn. It is with some examples of these that this paper deals.

The system of accounts I use here is set out and discussed in Appendix I. I have explained this system rather fully because it is essential to the discussion and because I believe that the design of a system itself is important in facilitating its use in economic analysis.

II. VOLUME AND PRICE INDICES OF NET OUTPUT

The central statement of all national accounts may be said to be the National Product Account, also known as the table of supply and use of resources. Of the various useful indicators which can be derived from the data in this table, I may mention just a few by way of example:

(1) the average percentage cost composition of all end-use products combined (i.e. private and public consumption, gross capital formation, and exports) in terms of the relative value of services rendered during this period by home factors of production (factor income=net national product), by foreign factors of production (imports), and by similar services rendered in the past (capital consumption);
(2) the net increase (or decrease) in the nation's stock of real capital (gross capital formation minus capital consumption);
(3) the ratio between exports and imports.

None of these indicators, nor the fact that the development of the money-value of each product account item over time can be analysed in terms of the development of its volume and its price between the base year and the current year calls for further comment. There would, however, appear to be reason to investigate somewhat more closely the meaning that attaches to the volume index and the price index of the net national product (NNP), and the use that can be made of them in economic analysis.

We may start by recalling the way in which these indices are calculated. In general, what is required to determine the volume and the price indices for the items in the product account expressed in current prices, is either the current-year value of

the item at base-year prices (if the volume index is to be a Laspeyres index and the price index a Paasche index) or the base-year value of the item at current-year prices (if, instead, the volume index is to be current-year weighted and the price index base-year weighted). In the case of the NNP these values are not measured in terms of the input of services rendered by the home factors of production, but on the basis of net output, i.e. as an aggregate of all other items of the National Product Account. In this aggregate the output items (private and public consumption, gross capital formation, and exports) are positive elements and the input items (imports and capital consumption) are negative elements. The necessity of measuring the NNP in terms of net output derives among other things from the fact that, although the NNP has its origin in the input of services rendered by the home factors of production, the remuneration of at least one of these factors, namely entrepreneurial activity, is dependent on the outcome of the production process and therefore cannot be determined without knowing what the total value of all the output and input items is.

From the way in which the volume index of the NNP is calculated it appears that this index is an index of the volume of net output, or, in other words, an indicator of the productiveness of the nation's economy. Changes in this productiveness may be due to changes in the productivity of individual factors of production or in their employment. While it may be possible to find a practical measure of the change in the employment of each individual factor it appears, unfortunately, impossible to ascertain the change in the productivity of individual factors of production. The basic difficulty here is that we cannot allocate a change in the net output between the various co-operating factors of production. One must be careful, therefore, not to give a causal interpretation to the type of statement which relates the volume of net output with the volume of one of the co-operating factors of production, e.g. labour, for it may well be that the change in net output is not at all due to a change in the productivity of this factor but to the change in productivity of another factor, say capital.

From the foregoing it will also be clear that the price index of the NNP indicates how the amount of money for which a unit of net output of the home factors of production can be obtained has changed between the base year and the current

year. In other words it shows how the price of the product of a given combination of home factors of production of given productivity has changed. Looked at from a different angle, this price index can be said to show the combined effect of changes in the productivity and the rate of remuneration of the home factors of production on the price level of the national output gross of imports. As such it proves to be, like the price index of imports, a very useful tool in analysing changes in the purchasing power of the national currency.

III. CHANGE IN TERMS OF TRADE

National accounts statistics also enable the measurement of the effect of a change in the terms of trade between the national economy and the outside world on the real national income. How this effect is calculated can best be illustrated by means of a numerical example (see Table I, columns 1 to 4).

The idea on which the computation in the table is based is that export proceeds are used to finance an equal value of imports and that the remainder of imports is financed out of net international transfers from abroad. From a comparison of columns 2 and 4 it appears that owing to an unfavourable change in the terms of trade (measured by the ratio of the export price index over the import price index) the same volume of exported goods and services can buy in the current year only four-fifths of the volume of imported goods and services which it could buy in the base year. In other words the import purchasing power of exports (i.e. the volume of imports that can be obtained for a volume unit of exports) has fallen by 20 per cent. To the extent that exports are exchanged for imports in the current year the resulting loss in imports obtained in return for exports can be assessed immediately, provided we are prepared to assume that on the average the price development of the particular imports supposed to be received in return for exports and of the remaining imports, which consequently are supposed to be financed by net international transfers, has been the same. In the example given this loss appears to be equal to a volume of imports of 200 (measured at base-year prices). To the extent that imports are financed by net international transfers from abroad it is more difficult to say whether a loss has been incurred and, if so, what the measure of this loss is. The basic

difficulty here is that only one part of the exchange with abroad has taken place as far as these imports (in excess of the nation's exports) are concerned. In order to complete the exchange of goods and services with the outside world today's import-surplus will have to be matched by a future export-surplus of the same size. However, we do not know yet what the price situation will be by the time this export-surplus is created and there would clearly be no point in basing our calculation on any speculation as to this unknown future price development. The only way to overcome this difficulty is the introduction of a convention on which to base our calculation. As such we may choose to introduce as a working hypothesis that the prices prevailing at present will not be subject to change in the future. What would be the result of our calculation if it were based on

TABLE I

Effect of a change in the terms of trade on real national income

(Base year=100 for index numbers; values in currency units)

	Current Year				
	Value at Current-year Prices	Price Index	Value at Base-year Prices	Value at Current-year Export Prices	Value at Current-year Import Prices
1	2	3	4	5	6
Imports . . .	1,200	150	800	960	1,200
financed by: Exports . . .	1,200	120	1,000	1,200	1,500
Immediate effect of change in terms of trade	—	—	—200	—240	—300
Imports . . .	1,050	150	700	840	1,050
financed by: Net international transfers from abroad[1] .	1,050	120	875	1,050	1,312.5
Deferred effect of change in terms of trade .	—	—	—175	—210	—262.5
Total imports . .	2,250	150	1,500	1,800	2,250
Total effect of change in terms of trade . .	—	—	—375	—450	—562.5

[1] See Appendix I for the meaning of this term.

this convention? The answer would seem to be: today's excess-imports bought at a price 50 per cent higher than that in the base year will have to be offset by future excess-exports to be sold at a price only 20 per cent higher than in the base year. Consequently the nation will have to give up 875 future export-units to obtain in the current year the 700 extra import-units (see column 4 of Table I). The loss on imports financed by net international transfers abroad thus appears to be proportionally the same as on the imports financed by current-year exports. However, the future export-surplus need not necessarily be created by an expansion of exports; it might equally be the result of a future contraction of imports (the possibility that today's import-surplus was the result of speculative stock-piling of imported raw materials comes immediately to mind in this context). Now if this were to happen there would be no loss or gain due to changes in the terms of trade on the volume of imports financed by net international transfers from abroad and the calculation of the effect of changes in terms of trade could be confined to that given in the first part of Table I. This shows that it is not sufficient to lay down a convention with regard to prices only, which is not so surprising, for after all the effect of changes in the terms of trade is calculated as the product of a price difference and a volume. This volume can be either that of imports or that of exports and it will be clear that if these volumes differ the result of the calculation will also show a difference. In calculating the effect of changes in the terms of trade it should therefore be specified whether this effect is computed on the basis of total imports or on the basis of total exports. It will easily be seen that the first case mentioned above refers to a calculation based on total imports, requiring the whole of Table I, and the second case to a calculation based on total exports, requiring only the first part of Table I. In Appendix II the latter case is presented in algebraic terms and an all-purpose formula is developed for the analysis of a change in the trade balance in current prices into its component parts.

It should be noted that the mention of a third possibility, namely basing the calculation on either total imports or total exports according to whichever of the two has the lowest value in the current year, has been carefully avoided. This has been done intentionally, for the application of this method leads to odd results, as can readily be seen from the following extreme

example. Suppose all of a country's imports take place in the first half of the year and all of its exports in the second half. What would be the effect of changes in the terms of trade, calculated on the basis of this method for half-yearly periods and for yearly periods? For half-yearly periods the effect would always be zero, no matter what changes took place in the import and export prices, for the lowest value of the two (imports and exports) would always be zero. For yearly periods the story, however, would be a different one as there would be a certain amount of exports covered by imports, or the other way round, and so the effect of changes in the terms of trade would clearly differ from zero. In other words the half-yearly and the yearly calculations would render results which are incompatible with each other.

How all this fits into the national accounts framework is demonstrated below where the numerical example presented in Table I is further expanded so as to cover a complete set of purely national accounts[1] for the base year and the current year, linking the two by means of indices of price and volume. In order to keep the example simple the national income account and the national capital account have been consolidated. This makes it possible to lump together consumption (private and public) and domestic capital formation (including changes in stocks) into one item called 'national expenditure' (NE). It also makes it unnecessary to specify whether the national aggregates appearing in this system of accounts are gross or net of capital consumption. The argument concerning the difference between the national product (NP) and the national income (NI) in real terms, to be developed here, applies equally well to gross and net concepts, provided all aggregates concerned (NP, NI and NE) are either all on a gross or all on a net basis. Furthermore, it will be noted that in the example below the effect of a change in the terms of trade on the real income has been calculated on the basis of the export total.

Table II shows clearly that NP and NI in current prices are interchangeable concepts (cf. columns 2 and 6). In constant prices, however, there is a difference: NI, in our example, being 200 lower than NP (cf. column 4). This is exactly the same as the difference between the import-surplus in constant prices (500) –

[1] See note 7 on fully articulated national accounts in Appendix I for the meaning of this term.

TABLE II

Condensed purely national accounts in value and volume terms showing the effect of a change in the terms of trade with abroad

(Base year=100 for index numbers; values in currency units)

	Base Year	Current Year			
	Value at Base-year Prices	Volume Index	Value at Base-year Prices	Price Index	Value at Current-year Prices
1	2	3	4	5	6
A. NATIONAL ECONOMY					
1. *Product Account*					
NP . . .	2,000	125	2,500	114	2,850
Imports . .	1,000	150	1,500	150	2,250
Payables .	3,000		4,000		5,100
NE . . .	2,500	120	3,000	130	3,900
Exports . .	500	200	1,000	120	1,200
Receivables .	3,000		4,000		5,100
2. *Income and Capital Account*					
NE . . .	2,500	120	3,000	130	3,900
Payables .	2,500		3,000		3,900
NP . . .	2,000	125	2,500	114	2,850
Effect of change in terms of trade .	—	—	—200	—	—
NI . . .	2,000	115[1]	2,300	124[1]	2,850
Net international transfers from abroad . .	500		700	150	1,050
Receivables .	2,500		3,000		3,900
B. OUTSIDE WORLD					
3. *Consolidated Account*					
Exports of the nation . .	500	200	1,000	120	1,200
Effects of change in terms of trade .	—	—	—200	—	—
Import equivalent of exports .	500		800	150	1,200
Net international transfers to the nation . .	500		700	150	1,050
Payables .	1,000		1,500		2,250
Imports of the nation . .	1,000	150	1,500	150	2,250
Receivables .	1,000		1,500		2,250

[1] Derived from figures in columns 2, 4 and 6.

arrived at by deflating imports and exports each by their own price index (deflated values of imports and exports: 1,500 and 1,000 respectively) – and the net international transfers in constant prices (700) – arrived at by deflating the current value with the price index for imports (cf. column 4). This difference between NI and NP in real terms can be interpreted as follows. The NP at constant prices represents the volume of goods and services (net of imports) produced by the nation's own economic activity. Part of this product it exchanges with the outside world. Now the NI at constant prices represents the volume of goods and services which the nation obtains in return for its own productive effort, partly through exchange of its own product for foreign product. If the terms of trade turn against a nation, as they do in our example (import prices rise by 50 per cent and export prices by only 20 per cent), then the exchange with the outside world will have an unfavourable effect on the volume of the NI as compared with that of the NP (in our example the increases in these volumes are 15 per cent and 25 per cent respectively – cf. column 3). That the purchasing power of the NI is in our example unfavourably affected by the change in the terms of trade is apparent from its price index as compared with that of the NP (the NI price index stands at approximately 124 in the current year as against the NP price index at only 114 – cf. column 5). Had the effect of a change in the terms of trade been calculated on the basis of the import total instead of the export total, which would have required the net international transfers from abroad to be deflated by the export price index instead of the import price index, the NI in real terms in our example would have been even lower, the import total being higher than the export total and the change in the terms of trade being an unfavourable one. In this case NI and NP would not only have differed on account of the immediate effect of a change in the terms of trade but also on account of the deferred effect.

Often it will be desirable to have the effect of a change in the terms of trade between the base year and the current year expressed not in base-year prices (as in column 4 of Table I) but in current-year prices (as in columns 5 and 6 of Table I). Whether the price index for exports or the price index for imports should be used for this conversion to current-year prices depends entirely on the form in which the statement regarding the gain or loss due to a change in the terms of trade

is presented. The export price index should be used if the calculation of the effect is based on the import total and the statement accordingly runs in terms of either a comparison of the value imports would have had in the current year if import prices had shown the same development as export prices on the one hand with the actual current-year import value on the other, or, which amounts to exactly the same thing, a comparison of the volumes of exports which in the base year and in the current year respectively would have been just adequate to cover fully the current-year volume of imports. The appropriate figure for this measure of the effect would be −450 in the example given in Table I. Likewise the import price index should be used if the calculation of the effect is based on the export total and the statement accordingly runs in terms of either a comparison of the actual current-year export value with the value the same total exports would have had in the current year if export prices had shown the same development as import prices, or a comparison of the volumes of imports which in the current year and in the base year respectively could have been obtained in return for the current-year volume of exports. The appropriate figure for this measure of the effect would be −300 in the example given in Table I. It is worth noting in this context that these calculations, which involve a comparison of values at current-year prices, can conveniently be shortened. The first-mentioned measure of the effect can be obtained by simply multiplying the current-year import value by the change in the terms of trade index (this index being equal to the ratio of the export price index over the import price index) and the second-mentioned measure by multiplying the current-year export value by the change in the terms of trade index expressed in per cent of the current-year terms of trade index. This procedure is sometimes described as a comparison between the current-year import value 'revalued' at current-year export prices and the actual current-year import value (at current-year import prices), or in the case of export values as a comparison between the actual current-year value (at current-year export prices) and the current-year export value 'revalued' at current-year import prices.

IV. ANALYSIS OF PRICE CHANGES OF END-USE PRODUCTS

The data contained in the National Product Account also provide the necessary information for an analysis of price changes in terms of price-raising and price-lowering factors. The idea on which such an analysis is based is fairly simple and may again best be demonstrated with a numerical example (see Table III). The quantity of certain inputs in the national production process, such as imports, wage-earning labour, and the using up of existing real capital (capital consumption) can be measured. The development of the total volume of each of these inputs is indicated in column 3. It should be reiterated that only the development of their volume is indicated and not whether the change in the use of these inputs in the national production process is due to a change in their productivity or to a change in production techniques or in the commodity pattern of production. By dividing these input volume indices by the volume index of total output (110) we get the volume index for each of these inputs per unit of output (see column 7). Furthermore, we can obtain a price index for each of these inputs by dividing their current value in the current year (column 6) by their value in the current year at base-year prices (column 4), which in its turn is obtained by multiplying the current value of these inputs in the base year (column 2) with their own volume index (column 3). The price indices (column 5) and the corresponding volume indices (column 7) for these input elements per unit of output combined with the cost composition of the price per unit of output in the base year (column 8) – obtained by expressing the figures in column 2 in percentage of their total – is all that is needed to determine to what extent the total change in the price of a unit of national output (20 per cent) is caused by changes in the volumes (column 11) and by changes in the prices (column 12) of these input elements. The calculation proceeds as follows: the percentage change in the volume of a certain input per unit of output is multiplied by the share of this input in the base-year price of a unit of output and this gives the element of price change due to the change in volume of this input, thus for instance for imports $\frac{72.7-100\times 35}{100}=-9.5$. To calculate the effect of the price change of this input on the price

TABLE III

Computation of effect of price-raising and price-lowering factors on the price level of national output

Input Elements	Total Output					Per Unit of Output					
	Base year	Current year				Volume Index	Cost Composition of Price in		Price Changes		
									Total	Due to Change in	
	Current Value	Volume Index	Value at Base-Year Prices	Price Index	Current Value		Base Year	Current Year		Input Volume	Input Price
1	2	3	4	5	6	7	8	9	10	11	12
Imports	17.5	80	14	150	21	72.7	35	38.2	+3.2	−9.5	+12.7
Capital consumption	2.5	100	2.5	120	3	90.9	5	5.5	+0.5	−0.5	+0.9
Wage-earning labour	16	125	20	115	23	113.6	32	41.8	+9.8	+4.4	+5.5
Sub-total	36		36.5		47		72	85.5	+13.5	−5.6	+19.1
Non-wage income[1]	10				16.5		20	30	+10		
Indirect taxes	6.5				2.5		13	4.5	−8.5		
Subsidies	−2.5				—		−5	—	+5.0		
National Output	50	110	55	120	66	100	100	120	+20		

[1] Valued at factor cost.

per unit of national output, the percentage change in the price of this input is multiplied with the share of this input in the base-year price corrected for the effect of the volume change of this input on this share, thus for imports

$$\frac{150-100}{100}\times(35-9.5)=+12.7.$$

For the other elements of input it has been considered more appropriate to refrain from an analysis of the change in their value into a volume and a price component. Instead, their effect on the price of a unit of national output has been assessed directly by comparing their share in the current-year price (120) with that in the base year. To this purpose the current-year price of 120 has been analysed according to its components in column 9, which has simply been obtained by multiplying column 6 with 120/66. It is worth noting that the combined effect of the changes recorded in columns 11 and 12, as indicated in column 10, corresponds with the difference between column 9 and column 8, as it should do. As regards non-wage income it appears that the margin in the price which allows for this element of productive activity has increased, in our example, from 20 per cent to 25 per cent (=30/120) of the market price between the base year and the current year, and that the rate of indirect taxation has decreased from 13 per cent to 3¾ per cent, while finally the 5 per cent subsidy has disappeared entirely.

A similar analysis of price changes can also be made for the different types of end-use items in the total national output, and if necessary even for individual commodities. In the cost composition of these separate types of end-use items or individual commodities, however, there appear also product transfers (for a description of this concept see Appendix I). Therefore, if one wants to know not only the direct effect of, say, a change in wage rates on the consumption price level but also the total effect, it will be necessary to analyse first the cost composition of these product transfers in terms of the more basic input elements listed in Table III. In other words, one has to determine the cumulated cost quotas. How this can be done is indicated in Appendix III. One may even go one step further and decide not to consider capital consumption as a basic element of input. If this is done then capital consumption also will have to be decomposed first into the remaining elements of

input before an analysis of price changes in terms of price-raising and price-lowering factors is undertaken.

V. TRANSFER ITEMS IN INCOME AND CAPITAL ACCOUNTS

After having dealt at some length with the data in the National Product Account we may now turn to the income and capital accounts by sector to focus attention on the transfer items in these accounts. By means of income and capital transfers purchasing power is redistributed between the various sectors of the economy in such a way that *ex post* every sector has the necessary means for financing its expenditure on consumption and capital formation (see Appendix I for a description of the meaning of the terms income and capital transfers).

This is most clearly and concisely brought out in the so-called semi-articulated national accounts, a lesser known form of national accounts presentation. A system is articulated if for every item there is a corresponding counter-item somewhere in the system. The term 'semi-articulated' serves to indicate that the accounts are articulated only in respect of the main items, that is to say the national totals of each of the basic types of transaction or internal booking, but not in respect of the sub-items, which show the distribution of the main items over the sectors. The semi-articulated national accounts of the Netherlands economy in 1950 and 1951, reproduced below, correspond to the fully articulated accounts presented in Appendix I. In the original source these data are stated to be preliminary. Here they should therefore be considered as purely illustrative.

It will be seen that, while for the nation as a whole the total of each type of (national) transfer is equal to zero (which explains the absence of counter-items for these transfers in the above accounts), they leave a balance for each separate sector. Consolidating the National Income Account and the National Capital Account in the above system, which results in the saving or dissaving disappearing from the picture, the net income and capital transfers per sector appear to be just sufficient together with factor income (and capital consumption allowances) to finance the expenditure on consumption and capital formation per sector.

Inter alia, it may be remarked that this system of semi-

Semi-articulated national accounts of the Netherlands economy 1950 and 1951

(in billion guilders and at current prices)

preliminary data

A. *National Economy*

I. NATIONAL PRODUCT ACCOUNT

Payables				Receivables			
Item	Description	1950	1951	Item	Description	1950	1951
1.2	*Factor income*	*17.66*	*19.42*	*1.1*	*Product transfer (on balance)*	—	—
	enterprises	16.36	18.02		from (+) or to (−)		
	government	1.30	1.40		enterprises	+1.42	+1.69
					government	−1.42	−1.69
1.3	*Capital consumption allowances*	*2.00*	*2.26*				
	enterprises	1.66	1.88	2.1	*Consumption*	*14.96*	*16.48*
	government	0.34	0.38		goods and services delivered by		
					enterprises	12.30	13.50
1.4	*Imports*	*8.84*	*10.80*		government	2.66	2.98
	enterprises	8.67	10.70	3.1			
	government	0.17	0.10		*Gross domestic capital formation*	*5.60*	*5.20*
					goods delivered by		
					enterprises	5.08	4.68
					government	0.52	0.52
				4.1	*Exports*	*7.94*	*10.80*
					enterprises	7.89	10.75
					government	0.05	0.07
1	*Total national economy*	*28.50*	*32.48*	1	*Total national economy*	*28.50*	*32.48*
	enterprises	26.69	30.60		enterprises	26.69	30.60
	government	1.81	1.88		government	1.81	1.88

II. NATIONAL INCOME ACCOUNT

Payables				Receivables			
Item	Description	1950	1951	Item	Description	1950	1951
2.1	*Consumption*	*14.96*	*16.48*	1.2	*Factor income*	*17.66*	*19.42*
	enterprises	4.21	4.75		enterprises	9.32	10.39
	wage earners	8.14	8.80		wage earners	8.10	8.80
	government	2.61	2.93		pension and insurance funds	0.05	0.06
					government	0.19	0.17
2.3	*Saving (+) or dissaving (−)*	*2.70*	*2.94*				
	enterprises	1.84	1.44	2.2	*Income transfers (on balance)* to (+) or from (−)	—	—
	wage earners	−0.20	−0.15		enterprises	−3.27	−4.20
	pension and insurance funds	0.62	0.67		wage earners	−0.16	−0.15
	government	0.44	0.98		pension and insurance funds	0.57	0.61
					government	2.86	3.74
2	*Total national economy*	*17.66*	*19.42*	2	*Total national economy*	*17.66*	*19.42*
	enterprises	6.05	6.19		enterprises	6.05	6.19
	wage earners	7.94	8.65		wage earners	7.94	8.65
	pension and insurance funds	0.62	0.67		pension and insurance funds	0.62	0.67
	government	3.05	3.91		government	3.05	3.91

III. NATIONAL CAPITAL ACCOUNT

Payables				Receivables			
Item	Description	1950	1951	Item	Description	1950	1951
3.1	*Gross domestic capital formation*	*5.60*	*5.20*	1.3	*Capital consumption allowances*	*2.00*	*2.26*
	enterprises	5.08	4.68		enterprises	1.66	1.88
	government	0.52	0.52		government	0.34	0.38
				2.3	*Saving (+) or dissaving (−)*	*2.70*	*2.94*
					enterprises	1.84	1.44
					wage earners	−0.20	−0.15
					pension and insurance funds	0.62	0.67
					government	0.44	0.98
				3.3	*Capital transfers (on balance) to (+) or from (−)*	—	—
					enterprises	1.58	1.36
					wage earners	0.20	0.15
					pension and insurance funds	−0.62	−0.67
					government	−0.26	−0.84
					banking system	−0.90	—
				4.3	*Net international transfers*	*0.90*	—
					banking system	0.90	—
3	*Total national economy*	*5.60*	*5.20*	3	*Total national economy*	*5.60*	*5.20*
	enterprises	5.08	4.68		enterprises	5.08	4.68
	wage earners	—	—		wage earners	—	—
	pension and insurance funds	—	—		pension and insurance funds	—	—
	government	0.52	0.52		government	0.52	0.52
	banking system	—	—		banking system	—	—

B. *Outside world*

IV. CONSOLIDATED ACCOUNT

Payables				Receivables			
Item	Description	1950	1951	Item	Description	1950	1951
4.1	*Exports of national economy* .	*7.94*	*10.80*	1.4	*Imports of national economy* .	*8.84*	*10.80*
4.3	*Net international transfers to national economy* . . .	*0.90*	—				
4	*Total outside world* . . .	*8.84*	*10.80*	4	*Total outside world* . . .	*8.84*	*10.80*

articulated national accounts (supplemented, where possible, by a breakdown of the basic types of transaction into sub-groups, as in the fully articulated sector accounts) may prove to contain already much of the statistical information required for the study of many macro-economic problems. As such it may, therefore, equally well prove to be a happy medium between a fully articulated system of accounts for all the main sectors, which puts a considerable strain on the statistical services of a country, and the far less informative type of national accounts consisting only of a table of supply and use of resources, which still has to make do for a good many countries. Especially there, where the statistics do not reach any further than is necessary for determining sector by sector the total payables (receivables) on account of each type of economic transaction or internal booking, without allowing these total payables (receivables) to be broken down by sector of destination (origin), this system of accounts may prove to be helpful in a systematic presentation of the available data.

To get a detailed picture of the income and capital transfers, as may be required for monetary analysis, we have to depend on the fully articulated accounts for the main sectors of the economy, presented in Appendix I. All the detailed information is shown there in separate accounts. In the matrix table, on the other hand, the transfers appear all in one table, but the specification by type of income or capital transfer is not shown. It would therefore seem desirable to put, as it were, a magnifying glass on the matrix table and reproduce the relevant squares in the table with the specification by type of transfer put back into them. This has been done in Tables IV and V below.

The individual types of transfers, the description of which is self-explanatory, are all estimated on the basis of direct statistical measurement or obtained as residuals (net credits), with the exception of the distribution of the change in the stock of money in circulation over transaction money and cash reserves. The change in the amount of transaction cash balances should, at least in principle, be estimated on the basis of the change in the total value of all economic transactions in real as well as in financial assets. For practical purposes it is usually sufficient to assume that the percentage change in the latter closely corresponds to the percentage change in the national income, or better still the percentage change in the total of all

TABLE IV

Detailed matrix presentation of income transfers

Income transfers[1] Netherlands — preliminary data (in billion guilders) — from: \ to:	1950					1951				
	Enterprises	Wage earners	Pension and insurance funds	Government	Total payable	Enterprises	Wage earners	Pension and insurance funds	Government	Total payable
1	2	3	4	5	6	7	8	9	10	11
Enterprises:										
(a) pension premiums	—	—	*0.12*	—	4.00	—	—	*0.12*	—	4.82
(b) direct taxes	—	—	—	1.47		—	—	—	1.90	
(c) indirect taxes	—	—	—	2.41		—	—	—	2.80	
Wage earners:										
(a) pension premiums	—	—	*0.61*	—	1.30	—	—	*0.68*	—	1.36
(b) direct taxes	—	—	—	0.69		—	—	—	0.68	
Pension and insurance funds: pensions	—	*0.48*	—	—	0.48	—	*0.51*	—	—	0.51
Government:										
(a) social benefits	0.07	0.66	—	—	1.71	0.08	0.70	—	—	1.64
(b) annuities, etc.	—	—	0.14	—		—	—	0.14	—	
(c) public debt interest	0.38	—	0.18	—		0.39	—	0.18	—	
(d) subsidies	0.28	—	—	—		0.15	—	—	—	
Total receivable	0.73	1.14	1.05	4.57	7.49	0.62	1.21	1.12	5.38	8.33
payable	4.00	1.30	0.48	1.71	7.49	4.82	1.36	0.51	1.64	8.33
Income transfers on balance	−3.27	−0.16	0.57	2.86	—	−4.20	−0.15	0.61	3.74	—
Of which: requited	*−0.12*	*−0.13*	*0.25*	—	—	*−0.12*	*−0.17*	*0.29*	—	—
unrequited	−3.15	−0.03	0.32	2.86	—	−4.08	0.02	0.32	3.74	—

[1] *Requited* income transfers are printed in italics.

TABLE V *Detailed matrix presentation of capital transfers*

Capital transfers[1] Netherlands—preliminary data (in billion guilders) — from: \ to:	1950						1951					
	Enterprises	Wage earners	Pension and insurance funds	Government	Banking system	Total payable	Enterprises	Wage earners	Pension and insurance funds	Government	Banking system	Total payable
1	2	3	4	5	6	7	8	9	10	11	12	13
Enterprises:												
(a) death duties	—	—	—	*0.07*	—		—	—	—	*0.10*	—	
(b) various capital gains	—	—	—	*0.13*	—		—	—	—	*0.10*	—	
(c) reduction in tax arrears	—	—	—	0.44	—	1.04	—	—	—	0.14	—	0.84
(d) increase in transaction cash balances	—	—	—	—	0.40		—	—	—	—	0.50	
Wage earners	—	—	—	—	—	—	—	—	—	—	—	—
Pension and insurance funds: net credits	—	—	—	—	0.62	0.62	—	—	—	—	0.67	0.67
Government:												
(a) war damage payments (personal property)	*0.07*	—	—	—	—		*0.09*	—	—	—	—	
(b) war damage payments (business property)	*0.23*	—	—	—	—	1.12	*0.30*	—	—	—	—	1.35
(c) capital grants	—	—	—	—	—		—	—	—	—	—	
(d) net credits	0.82	—	—	—	—		0.96	—	—	—	—	
Banking system, etc.:												
(a) net credits	0.63	0.20	—	0.22	—		0.55	0.15	—	0.17	—	
(b) decrease in business cash reserves	0.87	—	—	—	—	1.92	0.30	—	—	—	—	1.17
Total receivable	2.62	0.20	—	0.86	1.02	4.70	2.20	0.15	—	0.51	1.17	4.05
payable	1.04	—	0.62	1.12	1.92	4.70	0.84	—	0.67	1.35	1.17	4.05
Capital transfers on balance	1.58	0.20	−0.26	−0.26	−0.90	—	1.36	0.15	−0.67	−0.84	—	—
of which: requited	1.48	0.20	−0.62	−0.16	−0.90	—	1.17	0.15	−0.67	−0.65	—	—
unrequited	*0.10*	—	—	*−0.10*	—	—	*0.19*	—	—	*−0.19*	—	—

[1] *Unrequited* capital transfers are printed in italics

Income and capital transfers on balance Netherlands (purchasing data)	1950					1951				
	Enterprises	Wage earners	Pension and insurance funds	Government	Total[1]	Enterprises	Wage earners	Pension and insurance funds	Government	Total[1]
1	2	3	4	5	6	7	8	9	10	11
(in billion guilders)										
(1) Income transfers: requited	−0.12	−0.13	0.25	—	—	−0.12	−0.17	0.29	—	—
(2) unrequited	−3.15	−0.03	0.32	2.86	—	−4.08	0.02	0.32	3.74	—
(3) Capital transfers: requited	1.48	0.20	−0.62	−0.16	0.90	1.17	0.15	−0.67	−0.65	—
(4) unrequited	0.10	—	—	−0.10	—	0.19	—	—	−0.19	—
(5) Total income transfers	−3.27	−0.16	0.57	2.86	—	−4.20	−0.15	0.61	3.74	—
(6) Total capital transfers	1.58	0.20	−0.62	−0.26	0.90	1.36	0.15	−0.67	0.84	—
(7) Requited transfers	1.36	0.07	−0.37	−0.16	0.90	1.05	−0.02	−0.38	−0.65	—
(8) Unrequited	−3.05	−0.03	0.32	2.76	—	−3.89	0.02	0.32	3.55	—
(9) Total transfers	−1.69	0.04	−0.05	2.60	0.90	−2.84	—	−0.06	2.90	—
(in per cent of total factor income)[2]										
(1) Income transfers: requited	−0.7	−0.7	1.4	—	—	−0.6	−0.9	1.5	—	—
(2) unrequited	17.8	−0.2	1.8	16.2	—	−21.0	0.1	1.6	19.3	—
(3) Capital transfers: requited	8.4	1.1	−3.5	−0.9	5.1	6.0	0.8	−3.5	−3.3	—
(4) unrequited	0.6	—	—	−0.6	—	1.0	—	—	−1.0	—
(5) Total income transfers	−18.5	−0.9	3.2	16.2	—	−21.6	−0.8	3.1	19.3	—
(6) Total capital transfers	8.9	1.1	−3.5	−1.5	5.1	7.0	0.8	−3.5	−4.3	—
(7) Requited transfers	7.7	0.4	−2.1	−0.9	5.1	5.4	−0.1	−2.0	−3.3	—
(8) Unrequited	−17.3	−0.2	1.8	15.6	—	−20.0	0.1	1.6	18.3	—
(9) Total transfers	−9.6	0.2	−0.3	14.7	5.1	−14.6	—	−0.3	14.9	—

[1] The figures in this column should in general be zero, except for the net international transfers, which have arbitrarily been classified here as requited capital transfers.

[2] Detail does not necessarily add to total because of rounding.

end-use items duly corrected for the fact that imports and exports do not make such heavy demands on the use of transaction money as the other items in the table of supply and use of resources.

A further distinction of income and capital transfers, namely between requited and unrequited transfers, has also been introduced in Tables IV and V. Requited transfers are those which give rise to future claims. They may, therefore, be considered as a form of investment of savings. While affecting available income and the other available means of financing consumption and capital formation one way in the present, they will eventually affect them in the opposite way some time in the future when these claims on income or wealth are exercised. In Table VI a summary of income and capital transfers is presented with special emphasis on the distinction between requited and unrequited transfers. Moreover, the transfers have also been expressed as a percentage of total factor income to show the change in their relative importance from one year to another.

Finally Table VII analyses the origin and the use of financial resources and also shows the financial resources as well as the various income totals per sector as a percentage of the respective national totals. This table, I think, brings out clearly the point that it is through the income and capital transfers that *ex post* the enterprises and the government end up with having just enough resources to finance their capital formation.

It should be noted that in Table VII requited transfers are treated as one of the forms in which saving can be invested. As regards terminology I would therefore like to recommend a clear distinction to be made between 'capital formation' and 'investment'.

Attention should also be drawn to the fact that the term 'saving' in this table has been given a meaning which differs from that normally attached to it in national accounting. The difference consists in the inclusion of unrequited capital transfers and the exclusion of requited income transfers. I would suggest that this saving concept is in a way to be preferred to the normal one in that it provides an opportunity to get rid of the distinction between income and capital transfers for which so far no clear statistical criterion has been formulated.

After having indicated and demonstrated the function of

Origin and use of financial resources Netherlands (preliminary data)	1950					1951				
	Enterprises	Wage earners	Pension and insurance funds	Government	Total	Enterprises	Wage earners	Pension and insurance funds	Government	Total
1	2	3	4	5	6	7	8	9	10	12
(in billion guilders)										
(1) Factor income	9.32	8.10	0.05	0.19	17.66	10.39	8.80	0.06	0.17	19.42
(2) Unrequited income transfers	−3.15	−0.03	0.32	2.86	—	−4.08	0.02	0.32	3.74	—
(3) Total income	6.17	8.07	0.37	3.05	17.66	6.31	8.82	0.38	3.91	19.42
(4) Unrequited capital transfers	0.10	—	—	−0.10	—	0.19	—	—	−0.19	—
(5) Net financial resources[2]	6.27	8.07	0.37	2.95	17.66	6.50	8.82	0.38	3.72	19.42
Used for:										
(6) Consumption	4.21	8.14	—	2.61	14.96	4.75	8.80	—	2.93	16.48
Remains:										
(7) Saving:	2.06	−0.07	0.37	0.34	2.70	1.75	0.02	0.38	0.79	2.94
Invested as follows:										
(8) Required income transfers	0.12	0.13	−0.25	—	—	0.12	0.17	−0.29	—	—
(9) Required capital transfers	−1.48	−0.20	0.62	0.16	−0.90	−1.17	−0.15	0.67	0.65	—
Remains available for investment in:										
(10) Net domestic capital formation:	3.42	—	—	0.18	3.60	2.80	—	—	0.14	2.94
(11) Available income (3—8)	6.05	7.94	0.62	3.05	17.66	6.19	8.65	0.67	3.91	19.42
(in per cent of total)										
(1) Factor income	52.8	45.8	0.3	1.1	100	53.5	45.3	0.3	0.9	100
(2) Total income	34.9	45.7	2.1	17.3	100	32.5	45.4	2.0	20.1	100
(3) Net financial resources	35.5	45.7	2.1	16.7	100	33.5	45.4	2.0	19.1	100
(4) Available income	34.3	44.9	3.5	17.3	100	31.9	44.5	3.5	20.1	100

[1] The total shown here represents the net international transfers, which arbitrarily have been classified as requited capital transfers.
[2] Financial resources, saving, and domestic capital formation are shown on a net basis, i.e. net of capital consumption; the gross concepts would require capital consumption to be treated as a component of financial resources.

income and capital transfers (redistribution of purchasing power with a view to balancing financing resources and needs) and after having dealt with matters of presentation of data in this field (Tables IV through VII) we may now complete the picture by indicating the use of these data in economic analysis. The first observation to be made here is that, although *ex post* financing resources and financing needs are always equal sector by sector, the transfers, which ensure this equality, are by no means automatic. In other words, if the financing resources are not forthcoming then the financing needs will have to be adjusted. From this it follows that the government, the banks, etc., can exercise a deliberate influence on the spending policy of the public through these transfers. In actual fact, present-day economic policy heavily relies on these instruments to reach its goals. And even where, as in war-time, the emphasis has to be shifted from these indirect controls to the more direct physical and price controls, the instruments of fiscal policy (changes in the bank rate, etc.) appear indispensable in ensuring that the system of direct controls does not get out of hand. It may be added here, that when a selective credit policy or capital subsidy policy is pursued it would be highly interesting to have financing accounts (combination of income and capital account) not only for the main sectors of the economy but also for separate industries.

From what has been said above, it would appear that from the standpoint of economic analysis there are at least two interesting problems connected with these transfers. The first one is to find out what the quantitative effects of changes in the taxation system, changes in the bank rate, etc., are in terms of changes in the actual size of these transfers. The second one is to determine the ultimate effect of these measures alone (that is separate from other forces) on the volume and composition, and on the price levels of consumption and capital formation. In this analysis it will appear that the flexibility of the various types of transfer differs greatly; pensions and public debt interest, for instance, will prove to be highly inflexible, whereas taxes and credits may be found to be very flexible.

In the analysis of monetary equilibrium and the causes of inflation or deflation, the information on changes in cash reserves and transaction money may, furthermore, appear to be very useful.

Finally, I would like to draw special attention to the concepts of 'total income' and 'net financial resources', in the sense in which these terms are being used in Table VII. I suggest that in those parts of economic analysis concerned with the demand for goods and services and with the supply of factor services by the owners of the factors of production, these income concepts may well prove to be more relevant than the concept of factor income which is often used, particularly in the second of the two parts of economic analysis mentioned. The main concern of each income earner, it would seem to me, is the amount of his income from which he benefits either through consumption or through investment.

Similarly I would suggest the distribution of 'total income' and of 'net financial resources' between the various sectors of the economy is more important than that of factor income, on which a good deal of emphasis has been put in wage negotiations in the immediate after-war years. It is interesting to see that according to the data in Table VII the wage earners' share in the Netherlands' total national income is the same on both scores, but that the share of enterprises in total factor income is considerably higher than that of wage earners, while on the other hand their share in 'total income' is considerably lower. A still better measure for the purposes of wage negotiations would be the *per capita* 'total income' of wage earners compared with the *per capita* 'total income' of other members of the nation.

APPENDIX I

A SYSTEM OF FULLY ARTICULATED NATIONAL ACCOUNTS FOR THE MAIN SECTORS OF AN ECONOMY

In the system of national accounts set out below the actual and imputed economic transactions and internal bookings, which, taken together, provide a consistent picture of the economic activity of a nation during a given period of time, are recorded on three basic types of account, namely:

(*a*) product accounts,
(*b*) income accounts, and
(*c*) capital accounts.

Each transaction or internal booking recorded in this system of accounts gives rise to a debit and a credit entry. On what types of account these entries are made depends on the type of transaction or internal booking. In the present system, with its three basic types of account, nine different types of booking can be made (the debit entries on each of the three types of account may be accompanied by corresponding credit entries on each of the three types of account). Each of these nine types of booking in the present system corresponds to one of nine different basic types of transaction or internal booking. This is shown in the matrix table below, in which the columns represent the debit sides and the lines the credit sides of the accounts.[1]

Credit entry on: \ Debit entry on:	1. Product account	2. Income account	3. Capital account
1. Product account	Product transfers	Consumption	Gross capital formation
2. Income account	Factor income	Income transfers	*Dissaving*
3. Capital account	Capital consumption	Saving	Capital transfers

[1] For other forms of presentation see my 'Recent experience in the use of social accounting in the Netherlands' in *Income and Wealth, Series I*, International Association for Research in Income and Wealth, Bowes & Bowes, Cambridge, 1951.

This strict relationship between basic types of transaction (or internal booking) and the basic types of account is not a feature which all systems of national accounts have in common. Many of these systems do not distinguish between product accounts and income accounts, but combine them into current accounts. In such systems with only two types of account (current and capital) not more than four different types of booking can be made:

(1) product transfers, consumption, factor income and income transfers all give rise to a debit entry as well as a credit entry on current account;
(2) capital consumption and saving are debited against the current account and credited against the capital account;
(3) gross capital formation and dissaving are recorded on the debit side of the capital account and on the credit side of the current account;
(4) capital transfers, as before, give rise to a debit entry as well as a credit entry on capital account.

Other systems combine the income and capital accounts into so-called financing accounts. This has similar results as can easily be seen from the matrix table above; income transfers, capital transfers, saving and dissaving together fill one square and likewise consumption and gross capital formation fill a second square, factor income and capital consumption a third and, finally, product transfers, as before, have a square all to themselves. Still other systems do not even distinguish the same types of accounts for all sectors of the economy and consequently it becomes very difficult to establish a link between the basic types of transaction and the accounts on which they are recorded in such systems. If an attempt is made, nonetheless, to establish such a link it often proves necessary to explain these systems first in terms of some such system as the one discussed here (see for instance *A Standardised System of National Accounts*, O.E.E.C., Paris, 1953).

That each transaction gives rise to a debit entry as well as an identical credit entry in the national accounts has nothing to do with the double-entry principle. It is merely a reflection of the two-sided character of economic transactions. Each transaction involves, namely, two transactors or parties to the transaction. For one of them the transaction will constitute a payable, that is an obligation to pay, and for the other a receivable, that is a claim to payment in money. However, it is equally true that each transactor normally makes two entries on his business accounts for each transaction, one debit entry and one credit entry, because each transaction changes two items on his balance sheet. This double-entry principle in business accounting reflects the fact that every transaction consists of two

parts. In national accounting these are considered as two separate transactions.

An example may serve to clarify further the point just made.

If producer A sells goods (intermediate products) to producer B on credit, then both will make an entry on their own product account (which is a supporting account of the profit and loss account, which in its turn is to be considered as a supporting account of the balance sheet). The entries will be in respect of a product transfer and A will make the entry on the credit side of his product account and B on the debit side of his product account. At the same time they will each make an entry on their capital accounts (or any other account which serves the same purpose and which has to be considered as a supporting account of the balance sheet). These entries will be in respect of a capital transfer, namely the credit which A has extended to B. A will make the entry on the debit side of his capital account and will consider it as the counter-entry corresponding to the credit entry on his product account and B will make the entry on the credit side of his capital account and consider it as the counter-entry corresponding to the debit entry on his product account. If nothing else were to happen during the accounting period a final internal booking in respect of changes in stocks (which form part of gross capital formation) would complete the bookings in the business accounts of A and B as well as in the national accounts: B would enter the increase in stocks on the credit side of his product account and on the debit side of his capital account and A would do the reverse, thereby restoring the balance in each of these four accounts.

It thus appears that what is considered by the individual transactors as one transaction gives rise to four entries in the national accounts, two for each of the two parts of the transaction (leaving aside the final internal booking). However, this is only so in principle for the the capital transfers are in fact recorded on balance in the national accounts; credits extended are netted out against credits received during the accounting period. This recording on balance of capital transfers obscures the underlying fourfold character of the recording of economic transactions in the national accounts. It thus appears that although the national accounts are in principle based on a system of double-entry book-keeping, the terms entry and counter-entry refer to the recording of the two sides of one part of a transaction by two different transactors, and not, as in business accounting, to the recording of the two parts of a transaction by one transactor. It should also be noted that the fourfold character of the recording of economic transactions in national accounts is not limited to the recording of bilateral transactions. It applies equally in the case of

unilateral transactions. Tax payments in money for instance do not only give rise to the recording of an income transfer. They also involve a capital transfer as the cash balances of the taxpayer are reduced by the amount of the tax and the cash balances of the government are increased by the same amount. These changes in cash balances have to be considered as a capital transfer, for cash balances constitute claims on the central bank. In other words the payment of the tax reduces the credits extended by the taxpayer to the central bank and increases the credits extended by the government to the central bank.

So far the discussion has been confined to the recording of economic transactions during the accounting period. However there is more than this in any system of accounts. In both business and national accounts a number of internal bookings are made at the end of the accounting period. These bookings close the accounts and restore the balance between the two sides of each individual account. The entries in this respect are therefore often referred to as the balancing items of the accounts. These internal bookings complete, as it were, the system of recording by indicating the changes that have taken place during the accounting period in certain balance sheet data for which no permanent record is kept. It is not surprising therefore that the counter-entries in respect of gross capital formation (i.e. accumulation of stocks of fixed real assets and other goods) and capital consumption, the balancing items of the product account, and saving and dissaving, the balancing items of the income account, are all to be found on the capital account. Unlike the economic transactions these internal bookings are not two-sided in character as there is only one party involved. However, the double-entry principle is fully observed, and it may be said that it is only for these internal bookings that the application of this principle comes clearly to light in the national accounts.

The presentation and scope of the items on the capital account require some further discussion. It has been pointed out already

(i) that of the capital transfers, contrary to all other entries in respect of economic transactions, only the balance over the accounting period is shown and that this obscures the application of the double-entry principle in national accounting,

(ii) that the other items on the capital account all have their origin in internal bookings and that these provide the only clear example of the application of the double-entry principle in national accounting.

The presentation of the items which find their origin in internal bookings and which all appear on the capital account can be simplified and this may sometimes prove to be desirable for certain reasons.

When for instance the emphasis is entirely on the change in the balance sheet data it will be convenient to show only the net changes in real assets and in the financial claims on these assets. As regards saving and dissaving, this will automatically be done in the accounts of individuals and institutions (such as business firms and government) but not necessarily when grouped together on a national basis. Gross capital formation and capital consumption will appear separately even in the accounts of individuals and institutions, but here, too, it is possible to show only the net change in the stock of capital goods and other goods. In terms of the matrix shown in the second paragraph of this Appendix, this amounts to netting out against each other the items on capital account in the squares on opposite sides and at equal distance of the main diagonal of the matrix, leaving two squares blank, and to changing the description of the items in the other two squares into 'net capital formation' and 'saving on balance'. It should be noted that this operation

(i) leaves the balance between the two sides of each of the three accounts unaffected,

(ii) introduces the possibility of negative items appearing in the system.

Another simplification procedure, which is sometimes applied in view of the unsatisfactory statistical information in respect of capital consumption, is to combine capital consumption with factor income under some such title as 'gross factor income'. This procedure, however, does upset the balance between the two sides of all three accounts unless saving is also recorded on a gross basis, i.e. inclusive of capital consumption. Using the following symbols:

P=product transfers C=consumption
Y=factor income T=income transfers
D=capital consumption S=saving
I=gross capital formation
E=dissaving
B=capital transfers

the three alternative forms of presentation of the national accounts discussed above can be formulated in matrix form as follows:

P	C	I
Y	T	E
D	S	B

P	C	I−D
Y	T	
	S−E	B

P	C	I
Y+D	T	E
	S+D	B

The system of national accounts set out below is principally based on the first form of presentation, with the one exception that saving on balance is shown in the tables instead of saving and dissaving separately.

Not only the presentation but also the scope of the various items which have their origin in internal bookings requires some further discussion. Normally the national accounts are based on what, using a business accounting term, may be called the 'rentability' approach. This approach implies (i) determination of gross capital formation on the basis of the quantity of newly acquired real fixed assets and the change in the quantity of other physical assets during the accounting period, both valued at replacement cost, and (ii) determination of capital consumption on the basis of the quantity of fixed assets used up in the production process during the accounting period again valued at replacement cost. Another approach, which may conveniently be labelled the 'solvability' approach, also takes into account the capital gains or losses due to price changes during the accounting period incurred on all real assets forming part of the country's stock of capital, that is to say, including those that were already part of it at the beginning of the accounting period. If these capital gains or losses are taken into account in determining gross capital formation the accounts would be thrown out of balance unless similar adjustments are made to factor income and saving. Still another approach is what may be termed the 'liquidity' approach. In this approach the item capital consumption changes its character and should be renamed 'depreciation', for the idea here is to have a fund available out of which new purchases of fixed assets can be financed once the need for replacement arises, thereby keeping the stock of physical assets intact. In order to be adequate to meet the requirements this fund should contain an amount equal to the quantity of fixed assets used up in the production process in this and previous accounting periods, less the replacements made in this and previous accounting periods, valued at present replacement cost. This means that if prices rise there will be arrears in depreciation for which supplementary charges have to be made; the reverse will be true if prices fall. This treatment of depreciation requires similar changes in the opposite direction in factor income and saving. Indicating capital gains by the symbol G and depreciation arrears by the symbol A and using for the rest the same symbols as before, the three alternative approaches can be presented in matrix form as follows:

'rentability'

P	C	I
Y	T	(F)
D	S	B

'solvability'

P	C	I+G
Y+G	T	(E)
D	S+G	B

'liquidity'

P	C	I
Y−A	T	(E)
D+A	S−A	B

In the system of national accounts set out below the first of these three alternative approaches to the question as to what should be the scope of the internal booking items has been applied.

Thanks to the two-sided character of economic transactions and to the application of the double-entry principle in respect of internal bookings every item has a corresponding counter-item in the system of national accounts. In other words every payable is matched by a receivable. On the strength of this national accounts systems have been described as systems of (actual and imputed) money-flows, going from one transactor to another, or from one account to another. This description, however, is somewhat misleading. It would be correct if the system recorded receipts and payments of money, but it does not. It records the flows of goods and services (including factor services) and financial assets, as measured by their money-value. Wherever these flows are matched by money-flows they were moving exactly in the opposite direction. Money itself appears in the system as a financial asset, namely a claim held against the banking system. Together with the flows of other financial assets the flows of money are recorded on the capital accounts and on no other type of account. All this does not take away the fact that it often proves particularly helpful to conceive of each transaction as being settled by immediate cash payment, but this of course is quite a different matter.

The system of three basic types of account and nine basic types of transaction or internal booking is sufficient to provide a picture of the economic activity in a closed economy which is complete and consistent in itself. Further detail can be added to this system by distinguishing a number of sub-groups within the basic types of transaction and by dividing the economy into a number of sectors and sub-sectors of groups of transactors having certain characteristics in common. But what about such items as imports and exports, which enter the picture as soon as an open economy is being described instead of a closed economy? Where do these items fit into the system of national accounts? To answer these questions the procedure that clearly recommends itself is to divide the world as a whole,

which undoubtedly is a closed economy, into two sectors, namely the national economy and the outside world, each of them open economies between which economic relations exist.

Using the same symbols as before for the different types of transaction and adding a first subscript to indicate the economy in the accounts of which the transaction (or internal booking) is recorded on the debit side and a second subscript for the economy in the accounts of which a credit entry is made, the following matrix representing the breakdown of the world into two sectors, namely 1=national economy, and 2=rest of the world, can be constructed:

	1. National economy			2. Rest of the world		
1. National economy	P_{11}	C_{11}	I_{11}	P_{21}	C_{21}	(I_{21})
	Y_{11}	T_{11}	E_{11}	Y_{21}	T_{21}	(E_{21})
	D_{11}	S_{11}	B_{11}	(D_{21})	(S_{21})	B_{21}
2. Rest of the world	P_{12}	C_{12}	(I_{12})	P_{22}	C_{22}	I_{22}
	Y_{12}	T_{12}	(E_{12})	Y_{22}	T_{22}	E_{22}
	(D_{12})	(S_{12})	B_{12}	D_{22}	S_{22}	B_{22}

This matrix can be considerably simplified. In the first place it should be recalled that all the entries on the capital account, except the capital transfers, are in respect of internal bookings, that is to say bookings on the accounts of one and the same sector. This means that all the squares of which the symbols have been put in brackets will remain empty. Secondly, it may be observed that in drawing up national accounts the statistical knowledge as to the intra-sector transactions and internal bookings which should be recorded on the three accounts for the rest of the world will invariably be inadequate to complete each of these accounts. The only way of overcoming this difficulty is by consolidating the three accounts for the rest of the world. This process of consolidation involves the combination of these accounts into one account and crossing-out of the entries appearing identically on both sides of that combined account. This disposes of all the entries (with subscripts $_{22}$) in the lower right-hand square of the matrix. This operation will furthermore result in

combining on the debit side of this consolidated account for the rest of the world:

(i) product transfers to the rest of the world (P_{21}) and tourist expenditure of foreigners (C_{21}),
(ii) factor income earned abroad by the members of the nation (Y_{21}) and income transfers from foreigners to the members of the nation (T_{21}),

and on the credit side:

(i) product transfers from the rest of the world (P_{12}) and factor income payable to foreigners (Y_{12}),
(ii) tourist expenditure of members of the nation abroad (C_{12}) and income transfers to foreigners (T_{12}).

However, if the rendering of factor services to the rest of the world is considered as a form of national enterprise (first convention) and tourists abroad are considered to exercise a productive function on their own behalf, namely that of importing the goods and services they consume abroad (second convention), then Y_{21} (and likewise Y_{12}) and C_{12} (and likewise C_{21}) will become zero. Each of them will, if these conventions are adopted, become part of the product transfers with abroad, and furthermore, income earned abroad will become part of the factor income earned by national enterprise and the tourist expenditure abroad part of the consumption goods and services obtained from national enterprise. Retaining the given symbols for the values the items would have if the two conventions mentioned above were not introduced, and using new symbols for these items after introduction of the two conventions, namely

X_1=exports Y_1=total factor income earned at home and abroad

M_1=imports C_1=total consumption at home and abroad

where

$$X_1=(P_{21}+C_{21})+Y_{21} \text{ and } Y_1=Y_{11}+Y_{21}\text{—first convention}$$

$$M_1=(P_{12}+Y_{12})+C_{12} \text{ and } C_1=C_{11}+C_{12}\text{—second convention}$$

t appears that through the introduction of these conventions none of the accounts are thrown out of balance.
They now read as follows:

(*a*) national product account:

$$[P_{11}]+Y_1+D_{11}+M_1=[P_{11}]+C_1+I_{11}+X_1$$

(*b*) national income account:

$$C_1+[T_{11}]+S_{11}+T_{12}=Y_1+[T_{11}]+E_{11}+T_{21}$$

(*c*) national capital account:

$$I_{11}+E_{11}+[B_{11}]+B_{12}=D_{11}+S_{11}+[B_{11}]+B_{21}$$

(*d*) consolidated account for the rest of the world:

$$X_1+T_{21}+B_{21}+[\quad]=M_1+T_{12}+B_{12}+[\quad]$$

By inter-changing the subscripts $_1$ and $_2$ the conventions and their implications for the accounts of the rest of the world can be demonstrated. In doing this it will also be seen that $X_1=M_2$ and $M_1=X_2$.

One more difficulty presents itself with regard to the consolidated account for the rest of the world, and that is the distinction between income transfers and capital transfers. The distinction between these two types of transfer is already difficult enough if it has to be made for transactions taking place within the national economy. Death duties, which are regarded by the government as a current source of income and by the private sector as a payment out of financial capital, provide a classic example of this. For national transfers this difficulty is usually overcome by introducing some sort of convention which decides the borderline cases, which quantitatively are rather unimportant, by classifying them either as income or as capital transfers. With regard to international transfers an even more radical convention seems to recommend itself, for one is often ill-informed as to whether these transfers are considered by the foreigners making or receiving them as affecting their capital or their income. And in view of the fact that international credits usually form the major part of these international transfers it seems advisable to introduce as a third convention that all international transfers are to be considered as capital transfers to and from abroad, and that like all other capital transfers they should be recorded only on balance. This new convention, which renders international income transfers (T_{21} and T_{12}) equal to zero, affects of course also the item (national) saving. Retaining again the given symbols for the values the items would have if this additional convention were not introduced, and using new symbols for these items after introduction of the new convention, namely

A_1=international transfers received on balance

S_1=total national saving on balance, excluding international transfers

where

$$A_1=(T_{21}+B_{21})-(T_{12}+B_{12})$$

$$S_1=(S_{11}-E_{11})-(T_{21}-T_{12})$$

it appears that again none of the accounts are thrown out of balance through the introduction of this new convention. The accounts affected by the change now read as follows:

(*b*) national income account:

$$C_1+[T_{11}]+S_1=Y_1+[T_{11}]$$

(*c*) national capital account:

$$I_{11}+[B_{11}]=D_{11}+S_1+[B_{11}]+A_1$$

(*d*) consolidated account for the rest of the world:

$$X_1+A_1+[\quad]=M_1+[\quad]$$

Applying the same convention to the accounts for the rest of the world it will be seen that $A_1=-A_2$. Taking into account the three conventions introduced above and using the new symbols for the international items and dropping the subscripts $_1$ and $_{11}$ the matrix for an open economy finally looks as follows:

P	C	I	X
Y	T	(E)	.
D	S	B	A
M	.	.	.

The system of accounts described so far consists of purely national accounts. Like any system of national accounts it provides a picture of the economic activity of a nation during a given period of time which is in itself complete and consistent. It does so, and this is for certain problems a considerable advantage, in a very concise manner, namely in terms of only eight national aggregates: national factor income, national consumption, national gross capital formation, national capital consumption, national saving (or dissaving) on balance, national imports, national exports and international transfers accruing to the nation (like savings, these may be either positive or negative). For many problems, however, more detail is required. This additional detail can be obtained in two ways: (*a*) by distinguishing a number of sectors within the national economy, or (*b*) by sub-dividing transaction groups into transaction sub-groups. It will depend on the type of problem for which the national accounts data are going to be used, whether and what sector breakdown or transaction sub-groups will be introduced in the system. In terms of the national accounts matrix the introduction of transaction sub-groups simply means that more than one group of transactions will be

recorded in one and the same square, which, however, does not change the fact that all transactions which find their place in one and the same square belong to one and the same basic type of transaction. The distinction of different sectors of the national economy has the effect of sub-dividing each main square into a number of sub-squares (namely n^2 sub-squares for each main square if n sectors are being distinguished, and all three types of account are carried for each of these sectors). A further consequence of the breakdown of the national economy into sectors is that it provides an opportunity to record the intra-national transfers (product transfers, income transfers, and capital transfers) to the extent that they are inter-sector transfers. In a system of purely national accounts only the international transfers are recorded, as all other transfers, i.e. the intra-national transfers, are all on the main diagonal of the matrix, which means that they would give rise to identical debit and credit entries on the same account.

The system of national accounts set out below refers to the Netherlands economy in the years 1950 and 1951 and is based, by way of illustration, on the preliminary data for these years as published by the Netherlands Central Plan Bureau in its Central Economic Plans for 1951 and 1952[1]). The main sectors distinguished here are the same as in these publications, namely:

1. enterprises
2. wage earners
3. pension and insurance funds
4. government
5. banking system
6. outside world.

The distinction between the first and the second sector is a functional one. Wage earners are (i) those who earn a contractual income from labour which is independent of production results, (ii) those who draw a pension, (iii) those who depend for their income on government transfers, such as the old age pensioners and the unemployed. All other income earners, private and public enterprises form part of the first sector; among them are big and small entrepreneurs, those drawing life annuities, owners of capital, and owners of dwellings. The income and spending of some people will be recorded in both sectors: their contractual labour income in the second sector and their income from capital in the first sector.[2] The labour income of entrepreneurs,

[1] These are, to my knowledge, the only examples of published national accounts containing a complete set of detailed capital accounts (or rather financing accounts) for sectors.

[2] It is somewhat difficult to see how in actual fact the other items on the income account, such as the consumption and income transfers of these people are divided between the two sectors.

together with their income from capital and their entrepreneurial income is recorded in the first sector, because their income depends on the production results. The fourth sector embraces only general government as public enterprises form part of the first sector. Furthermore the third and the fifth sector, pension and insurance funds on the one hand and the banking system on the other, consist only of the functions which these institutes have in the field of redistribution of purchasing power; the purely entrepreneurial part of their activities (i.e their costs and proceeds) is included with that of other enterprises in the first sector. Finally the outside world sector includes all persons and institutions which are not members of the nation, i.e. not normal residents of the country concerned.

In the national accounts matrix (see folding page at the end of this Appendix), which provides a picture of the economic activity in the main sectors of the Netherlands economy during 1951 as based on preliminary data, certain sub-squares do not contain any figures. Most of these blanks are systematic in character. They may be explained as follows.

(*a*) Intra-sector transfers, which if recorded would give rise to identical debit and credit entries on one and the same account of one and the same sector, are not recorded. Only if the accounts are obtained through combination of similar accounts for the sub-sectors of which the sector is composed can such entries appear on the combined account, and even then they disappear in the process of consolidation. The non-recording of intra-sector transfers explains the blanks on the main diagonal of the matrix. The sub-squares concerned are black. Inter-sector transfers, as distinct from intra-sector transfers, however, are recorded, namely in the sub-squares of the main squares along the main diagonal of the matrix; the entries in respect of these inter-sector transfers are made on two accounts of the same type for different sectors.

(*b*) Internal bookings, which are made in respect of gross capital formation and capital consumption, saving and dissaving, consist of an entry and a counter-entry on two different types of account for one and the same sector. One of these accounts is always a capital account. This explains why there cannot be any entries on the capital account of one sector which are matched by a counter-entry on the product or income account of another sector. The sub-squares which are left blank on this account have been marked with a cross. In addition to this the absence of product accounts for wage earners, pension and insurance funds, and banks explains the blanks in the sub-squares for gross capital formation and capital consumption

for these sectors. Likewise the absence of an income account for banks explains the blanks in the sub-squares for saving and dissaving for this sector.

(*c*) Saving is recorded on balance sector by sector. This explains the remaining blanks in the main squares for saving and dissaving.

(*d*) The sector pension and insurance funds has been defined in such a way that only the activity of these funds with regard to the redistribution of purchasing power is recorded on the accounts of this sector. Consequently there is no room for any entries in respect of consumption on the income account of the pension and insurance funds. This explains the blanks marked with a circle in the main square for consumption.

(*e*) The remaining blank in the main square for consumption is in respect of public consumption. This so-called collective consumption consists of services rendered by the government to the community. These services are the combined product of the input of raw materials and intermediate products, imported from abroad or purchased in the home market from the enterprises sector, the use of the government real assets (for which capital consumption allowances are charged) and the use of the factors of production employed by the government (employees' labour, financial capital, for which interest is imputed, etc.). The services rendered by the government to the community are, thus, entirely to be considered as a product of the productive sector of the government. All deliveries from enterprises to government are therefore in the nature of product transfers. This explains the blank marked with a small black square in the main square for consumption.

(*f*) Owners of capital form part of the sector enterprises. This implies that the income and spending of wage earners to the extent that they own capital is recorded on the accounts of the enterprises sector. This would appear to exclude the possibility of capital transfers between wage earners and other sectors (the appropriate sub-squares are indicated with a small black disc). One exception, however, is allowed, namely for capital transfers to and from the banks, which balance the saving or dissaving of the wage earner sector. Without this there would not be any possibility for wage earners' spending to differ from their income. Another possibility would have been to allow for capital transfers to and from enterprises instead of to and from the banks.

(*g*) The systematic character of most of the blanks in the line and column for the consolidated account of the outside world have

already been explained on pages 294–8 where the conventions introduced in constructing this account were discussed. The blanks concerned are indicated by a small circle.

(*h*) The remaining blanks on the consolidated account for the outside world are due to the channelling of international transfers (which in the preliminary 1951 accounts for the Netherlands happen to be zero) through the accounts of the banking system (a dot has been entered in the relevant sub-squares).

This leaves the following blanks which have not yet been explained:

(1) The blanks in the main square for factor income in respect of factor income other than wages and salaries originating in the government sector. These blanks can be partly explained as follows:

(*a*) The deliveries from the production sector to the consumption sector of government are valued at cost price, leaving neither profit nor loss. The lack of a market value for these services (which are not transacted in a market) makes it necessary to calculate the value of these services this way. The result of this valuation rule is that there is no room for entrepreneurial income accruing to the government from the productive activity in its own production sector. There is, however, still one type of factor income which might give rise to a debit entry on the government's product account and an identical counter-entry on the credit side of its income account, and that is the imputed interest. This interest, together with capital consumption and repair and maintenance charges, forms part of the imputed rent charged in respect of the use of government-owned real assets. This imputed rent forms part of government consumption.

(*b*) The remaining two blanks in the main square for factor income (indicated by asterisks) may be explained by the conventional rule that all interest on the public debt shall be considered as income transfer rather than factor income. This rule, combined with the imputation of an interest charge for the use of government real assets, is mainly one of accounting expediency. The alternative would be to consider part of the public debt as productive, namely that part which is used to finance the purchase of government real assets. It would, however, be extremely difficult, not to say impossible, to decide which sectors and to what extent receive factor income in the form of interest on the productive part of the public debt and which sectors and to what

extent receive an income transfer in the form of interest on the unproductive part of the public debt.

To leave all three sub-squares blank as has been done in the Dutch accounts implies that also the investment of financial capital in government assets is considered unproductive. If one goes as far as that, it might be preferable to treat the acquisition of such assets not as capital formation but to enter the full amount of the purchase straight into government consumption in the same way as the purchase of automobiles by households is treated as private consumption.

(2) The blanks in the main square for income transfers in respect of income transfers between enterprises (including entrepreneurs and financiers) and wage earners and income transfers from pension and insurance funds to enterprises would seem to be omissions in the Dutch accounts. The omission of income transfers between enterprises and wage earners may be due to lack of statistical knowledge as to the magnitude of these transfers. The omission of income transfers from pension and insurance funds to enterprises is harder to understand for it is explicitly stated that one of the sources of income of the enterprises sector is drawing of life annuities, which constitute an income transfer. An alternative solution which would result in an empty box for income transfers from pension and insurance funds to enterprises would be to consider those who draw life annuities as part of the wage earners sector, like those who draw a pension.

(3) Likewise the absence of capital transfers between enterprises and pension and insurance funds in the Dutch accounts would seem to be an omission, for on the one hand lump sum payments are made by households in buying life annuities and on the other hand pension and insurance funds make lump sum payments, e.g. in respect of policies arranging for payments of annual premiums in return for a lump sum payment at a later date.

(4) The remaining empty boxes concerning income transfers from pension and insurance funds to government and capital transfers between pension and insurance funds and government would appear to be more accidental in character, for one could conceive of arrangements, which in fact do not exist in the Netherlands, which would require entries to be made in these boxes. With regard to the credits from the pension and insurance funds to the government, it should be noted in this context that these are channelled through the capital account of the banking system.

Fully articulated national accounts form the main sectors of the Netherlands economy, 1950 and 1951

(in current prices and billions of guilders)

1. *Enterprises* — preliminary data

Payables — I. PRODUCT ACCOUNT — Receivables

Item	Description	1950	1951	Item	Description	1950	1951
	Product transfer from:	*0.12*	*0.10*		*Product transfer* to:	*1.54*	*1.79*
11.41	government	0.12	0.10	41.11	government		
					(a) capital formation goods	0.52	0.52
	Factor income to:	*16.36*	*18.02*		(b) other goods and sercives	1.02	1.27
11.12	enterprises						
	(a) earned at home	9.07	10.06		*Consumption*,[2] goods and services		
	(b) earned abroad	0.25	0.33		delivered to:	*12.30*	*13.50*
11.22	wage earners[1]			12.11	enterprises		
	(a) earned at home	6.65	7.26		(a) consumed at home	4.13	4.67
	(b) earned abroad	0.15	0.14		(b) consumed abroad	0.06	0.06
11.32	pension and insurance funds			22.11	wage earners		
	(interest)	0.05	0.06		(a) consumed at home	7.99	8.67
11.42	government				(b) consumed abroad	0.12	0.10
	(interest and profit)	0.19	0.17				
					Gross domestic capital formation,		
	Capital consumption allowances of:	*1.66*	*1.88*		goods delivered to:	*5.08*	*4.68*
11.13	enterprises	1.66	1.88	13.11	enterprises	5.08	4.68
	Imports from	*8.67*	*10.70*		*Exports* to:	*7.89*	*10.73*
11.64	outside world:			64.11	outside world:		
	(a) used at home	8.49	10.54		(a) goods and (non factor)		
	(b) used (consumed) abroad	0.18	0.16		services	7.49	10.26
					(b) factor services	0.40	0.47
	Total	26.81	30.70		Total	26.81	30.70

[1] Including employers' contribution to social security.

[2] Distribution over sub-items estimated: see note 2.

Payables — II. INCOME ACCOUNT — Receivables

Item	Description	1950	1951	Item	Description	1950	1951
	Consumption,[1] goods and services delivered by:	*4.21*	*4.75*	11.12	*Factor income* from: enterprises	*9.32*	*10.39*
12.11	(a) consumed at home	4.13	4.67		(a) earned at home	9.07	10.06
	(b) consumed abroad	0.06	0.06		(b) earned abroad	0.25	0.33
12.41	government	0.02	0.02				
				42.12	*Income transfers* from: government	*0.73*	*0.62*
	Income transfers to:	*4.00*	*4.82*		(a) social benefits	0.07	0.08
12.32	pension and insurance funds (pension premiums)	0.12	0.12		(b) public debt interest	0.38	0.39
12.42	government				(c) subsidies	0.28	0.15
	(a) direct taxes	1.47	1.90				
	(b) indirect taxes	2.41	2.80				
	Saving of:	*1.81*	*1.44*				
12.13	enterprises	1.84	1.44				
	Total	10.05	11.01		Total	10.05	11.01

[1] Distribution over sub-items estimated: see note 2.

Payables — III. CAPITAL ACCOUNT — Receivables

Item	Description	1950	1951	Item	Description	1950	1951
	Gross domestic capital formation,				*Capital consumption allowances* of:	*1.66*	*1.88*
	goods delivered by:	*5.08*	*4.68*	11.13	enterprises	1.66	1.88
13.11	enterprises	5.08	4.68				
					Saving of:	*1.84*	*1.44*
	Capital transfers to:	*1.04*	*0.84*	12.13	enterprises	1.84	1.44
13.43	government						
	(a) death duties . . .	0.07	0.10		*Capital transfers* from:	*2.62*	*2.20*
	(b) various capital gains .	0.13	0.10	43.13	government		
	(c) reduction in tax arrears .	0.44	0.14		(a) war damage payments (personal property) .	0.07	0.09
13.53	banking system increase in transaction cash balances	0.40	0.50		(b) war damage payments (business property) } (c) capital grants }	0.23	0.30
					(d) credits (net) . . .	0.82	0.96
				53.13	banking system		
					(a) credits (net) . . .	0.63	0.55
					(b) decrease in business cash reserves . . .	0.87	0.30
	Total . . .	6.12	5.52		Total . . .	6.12	5.52

2. *Wage earners*

I. PRODUCT ACCOUNT
(non-existent)

II. INCOME ACCOUNT

Payables					Receivables			
Item	Description	1950	1951	Item	Description	1950	1951
	Consumption,[1] goods and services delivered by:	*8.14*	*8.80*	11.22	*Factor income*[2] from: enterprises	*8.10*	*8.80*
22.11	enterprises				(a) earned at home	6.65	7.26
	(a) consumed at home	7.99	8.67		(b) earned abroad	0.15	0.14
	(b) consumed abroad	0.12	0.10	41.22	government	1.30	1.40
22.41	government	0.03	0.03		*Income transfers* from:	*1.14*	*1.21*
	Income transfers to:	*1.30*	*1.36*	32.22	pension and insurance funds (pensions)	0.48	0.51
22.32	pension and insurance funds (pension premiums)	0.61	0.68	42.22	government (social benefits)	0.66	0.70
22.42	government (direct taxes)	0.69	0.68		*Dissaving* of:	*0.20*	*0.15*
				23.22	wage earners	0.20	0.15
	Total	9.44	10.16		Total	9.44	10.16

[1] Distribution over sub-items estimated: see note 2.

[2] Including employers' contribution to social security.

III. CAPITAL ACCOUNT

Payables					Receivables		
Item	Description	1950	1951	Item	Description	1950	1951
	Dissaving of:	*0.20*	*0.15*		*Capital transfers* from:	*0.20*	*0.15*
23.22	wage earners	0.20	0.15	52.23	banking system (net credits)	0.20	0.15
	Total	0.20	0.15		Total	0.20	0.15

3. *Pension and insurance funds*

I. PRODUCT ACCOUNT

(incorporated in the product account of enterprises)

II. INCOME ACCOUNT

Payables				Receivables			
Item	Description	1950	1951	Item	Description	1950	1951
	Income transfers to:	*0.48*	*0.51*		*Factor income* from:	*0.05*	*0.06*
32.22	wage earners (pensions) . .	0.48	0.51	11.32	enterprises (interest) . .	0.05	0.06
	Saving of:	*0.62*	*0.67*		*Income transfers* from:	*1.05*	*1.12*
32.33	pension and insurance funds .	0.62	0.67	12.32	enterprises (pension premiums) .	0.12	0.12
				22.32	wage earners (pension premiums)	0.61	0.68
				42.32	government		
					(a) annuities, etc.. . .	0.14	0.14
					(b) public debt interest .	0.18	4.18
	Total . . .	1.10	1.18		Total . . .	1.10	1.18

III. CAPITAL ACCOUNT

Payables				Receivables			
Item	Description	1950	1951	Item	Description	1950	1951
	Capital transfers to:	*0.62*	*0.67*		*Saving* of:	*0.62*	*0.67*
33.53	banking system (net credits) .	0.62	0.67	32.33	pension and insurance funds .	0.62	0.67
	Total . . .	0.62	0.67		Total . . .	0.62	0.67

4. *Government*

Payables — I. PRODUCT ACCOUNT — Receivables

Item	Description	1950	1951	Item	Description	1950	1951
	Product transfer from:	*1.54*	*1.79*		*Product transfer* to:	*0.12*	*0.10*
41.11	enterprises			11.41	enterprises	0.12	0.10
	(a) capital formation goods .	0.52	0.52				
	(b) other goods and services .	1.02	1.27		*Consumption*, goods and services delivered to:	*2.66*	*2.98*
	Factor income[1] to:	*1.30*	*1.40*	12.41	enterprises[2]	0.02	0.02
41.22	wage earners	1.30	1.40	22.41	wage earners[2]. . . .	0.03	0.03
				42.41	government	2.61	2.93
	Capital consumption allowances of:	*0.34*	*0.38*				
41.43	government	0.34	0.38		*Gross domestic capital formation*, goods delivered to:	*0.52*	*0.52*
	Imports from:	*0.17*	*0.10*	43.41	government	0.52	0.52
41.64	outside world						
	(a) goods and (non-factor) services . . .	0.08	0.03		*Exports* to:	*0.05*	*0.07*
	(b) factor services (net interest)	0.09	0.07		outside world. . . .	0.05	0.07
	Total . . .	3.35	3.67		Total . . .	3.35	3.67

[1] Including employers' contribution to social security.

[2] Share of each of these items in their total estimated: see note 2.

II. INCOME ACCOUNT

Payables				Receivables			
Item	Description	1950	1951	Item	Description	1950	1951
	Consumption, goods and services delivered by:	*2.61*	*2.93*		*Factor income* from:	*0.19*	*0.17*
42.41	government	2.61	2.93	11.42	enterprises (interest and profit)	0.19	0.17
	Income transfers to:	*1.71*	*1.64*		*Income transfers* from:	*4.57*	*5.38*
42.12	enterprises			12.42	enterprises		
	(a) social benefits	0.07	0.08		(a) direct taxes	1.47	1.90
	(b) public debt interest	0.38	0.39		(b) indirect taxes	2.41	2.80
	(c) subsidies	0.28	0.15	22.42	wage earners (direct taxes)	0.69	0.68
42.22	wage earners (social benefits)	0.66	0.70				
42.32	pension and insurance funds						
	(a) annuities, etc.	0.14	0.14				
	(b) public debt interest	0.18	0.18				
	Saving of:	*0.44*	*0.98*				
42.43	government	0.44	0.98				
	Total	4.76	5.55		Total	4.76	5.55

III. CAPITAL ACCOUNT

Payables				Receivables			
Item	Description	1950	1951	Item	Description	1950	1951
	Gross domestic capital formation				*Capital consumption allowances* of:	*0.34*	*0.38*
43.41	goods delivered by: government	*0.52* 0.52	*0.52* 0.52	41.43	government	0.34	0.38
43.13	*Capital transfers* to: enterprises	1.12	1.35	42.43	*Saving* of: . . . . government	*0.44* 0.44	*0.98* 0.98
	(a) war damage payments (personal property) .	0.07	0.09		*Capital transfers* from:	*0.86*	*0.51*
	(b) war damage payments (business property)	0.23	0.30	13.43	enterprises		
	(c) capital grants				(a) death duties . . .	0.07	0.10
	(d) credits (net) . . .	0.82	0.96	53.43	(b) various capital gains .	0.13	0.10
					(c) reduction in tax arrears .	0.44	0.14
					banking system (net credits) .	0.22	0.17
	Total . . .	1.64	1.87		Total . . .	1.64	1.87

5. *Banking system*

I. PRODUCT ACCOUNT

(incorporated in the product account of enterprises)

II. INCOME ACCOUNT

(incorporated in the income account of enterprises)

III. CAPITAL ACCOUNT

Payables					Receivables			
Item	Description	1950	1951	Item	Description	1950	1951
	Capital transfers to:	*1.92*	*1.17*		*Capital transfers* from:	*1.02*	*1.17*
53.13	enterprises			13.53	enterprises		
	(a) credits (net) . .	0.63	0.55		increase in transaction cash balances . . .	0.40	0.50
	(b) decrease in business cash reserves . . .	0.87	0.30	33.53	pension and insurance funds (net credits)	0.62	0.67
53.23	wage earners (net credits) .	0.20	0.15				
53.43	government (net credits) . .	0.22	0.17	64.53	*International transfers* (net) from:	*0.90*	—
					outside world		
					(a) grants (net) . . }	0.90	—
					(b) credits (net) . . }		
	Total . . .	1.92	1.17		Total . . .	1.92	1.17

6. *Outside world*

Payables — IV. CONSOLIDATED ACCOUNT — Receivables

Item	Description	1950	1951	Item	Description	1950	1951
	Exports[1] of:	*7.94*	*10.80*		*Imports*[2] of:	*8.84*	*10.80*
64.11	enterprises			11.64			
	(a) goods and (non-factor) services	7.49	10.26		(a) used at home	8.49	10.54
	(b) factor services	0.40	0.47		(b) used (consumed) abroad	0.18	0.16
64.41	government	0.05	0.07	41.64	government		
					(a) goods and (non-factor) services	0.08	0.03
	International transfers (net) to:	*0.90*	—		(b) factor services (net interest)	0.09	0.07
64.53	banking system						
	(a) grants (net)	0.90	—				
	(b) credits (net)						
	Total	8.84	10.80		Total	8.84	10.80

[1] i.e. imports of outside world.

[2] i.e. exports of outside world.

Notes on Fully Articulated National Accounts for the Main Sectors of the Netherlands Economy, 1950 and 1951

The above accounts have been constructed on the basis of information contained in:

(a) *Central Economic Plan 1951*, Appendices A and B Central Planning Bureau, The Hague, September 1951) – for 1950 data; and

(b) *Central Economic Plan 1952*, Appendices I and II (Central Planning Bureau, The Hague, April 1952) – for 1951 data.

The only additional information required to make the system fully articulated was the distribution of the small items

103 'private consumption abroad', and

102 'consumers' goods and services delivered by government to households' between the sectors 'enterprises' and 'wage earners'. It was assumed that the share of each sector corresponded to its share in total private consumption as given in Items 551 and 451. The resulting figures are the following (estimated figures bracketed):

Private Consumption	1950			1951		
Estimated distribution over:	Enter-prises	Wage earners	Total	Enter-prises	Wage earners	Total
1	2	3	4	5	6	7
Consumed at home and delivered by:						
Enterprises (item 101)	(4.13)	(7.99)	12.12	(4.67)	(8.67)	13.34
Government (item 102)	(0.02)	(0.03)	0.05	(0.02)	(0.03)	0.05
Consumed abroad (item 103)	(0.06)	(0.12)	0.18	(0.06)	(0.10)	0.16
Total . . .	4.21	8.14	12.35	4.75	8.80	13.55

Although not necessary to make the system fully articulated it would have been desirable to have a breakdown of

item 43.13 into (b) war damage payments (business property), and
(c) capital grants,

and even more to have a breakdown of

item 64.53 into (a) grants (net), and
(b) credits (net).

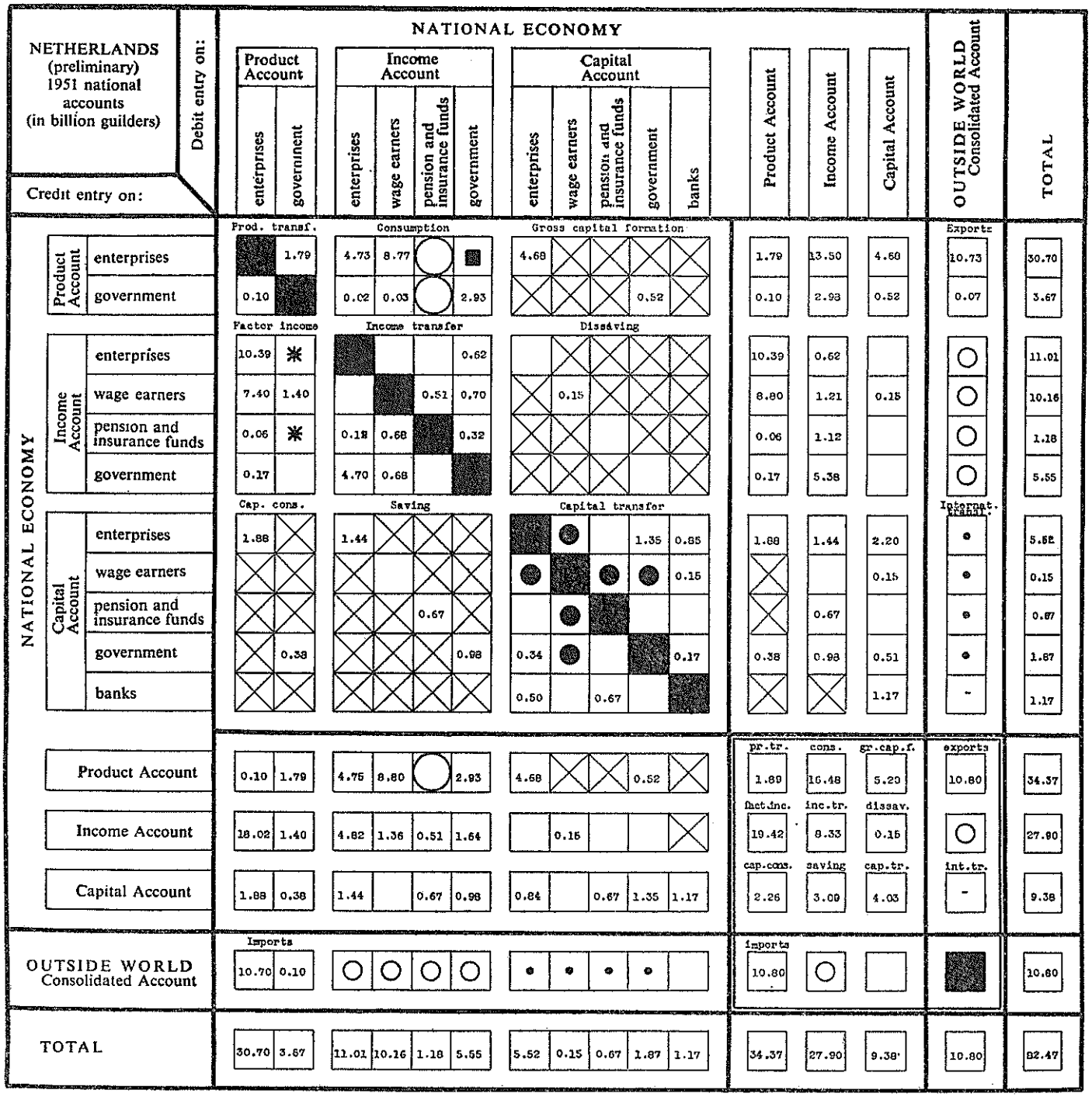
The latter breakdown would have enabled the calculation of 'available national income'.

As the above accounts are fully articulated, which means that every item appears twice, once on the debit side and once on the credit side, and as the same is true of the accounts in the original sources, it is sufficient to show here to what item or combination of items in the original sources the debit items in above accounts correspond. This correspondence is as follows:

11.41	= 301	11.32	= 307
11.12(a)	= 306+303−326	11.42	= 308
(b)	= 503[1]−11.22(b)	11.13	= 304
11.22(a)	= 305	11.64(a)	= 302
(b)	= 151−(305+405)	33.53	= 364

[*continued on page 315*

[1] Although this item is described as 'interest (net)' it has been assumed that it also contains 'wages' as part of the total factor income from abroad payable to households.


NETHERLANDS (preliminary) 1951 national accounts (in billion guilders)
Debit entry on:
Credit entry on:
NATIONAL ECONOMY
Product Account
Income Account
Capital Account
enterprises
government
wage earners
pension and insurance funds
banks
Product Account
Income Account
Capital Account
OUTSIDE WORLD Consolidated Account
TOTAL
NATIONAL ECONOMY
Prod. transf.
Consumption
Gross capital formation
Exports
Factor income
Income transfer
Dissaving
Cap. cons.
Saving
Capital transfer
Internat. transf.
Imports
OUTSIDE WORLD Consolidated Account
pr.tr.
cons.
gr.cap.f.
exports
fact.inc.
inc.tr.
dissav.
cap.cons.
saving
cap.tr.
int.tr.
imports
TOTAL
For explanation of:
see paragraph (a), page 300
see paragraph (b), page 300
see paragraph (d), page 301
see paragraph (e), page 301
see paragraph (f), page 301
see paragraph (g), page 301 and pages 304–5
see paragraph (h), page 302
see paragraph (l), page 302
see paragraph (c), page 301 and pages 302–3

41.11(a) = 602
(b) = 401
41.22 = 405
41.43 = 404
41.64(a) = 402
(b) = −426
42.41 = residual of account 41
42.12(a) = 406−254
(b) = 103
12.11(a), (b), 12.41 } see note 2
12.32 = 104−453
12.42(a) = 553−106
(b) = 303
12.13 = residual of account 12
13.11 = 601
13.43(a) = 106
(b) = 309
(c) = 555
13.53 = 556
22.11(a), (b), 22.41 } see note 2
22.32 = 453
22.42 = 452
23.22 = residual of account 23
32.22 = 351
32.33 = residual of account 32 (−202)
(b) = 407
(c) = 403
42.22 = 254
42.32(a) = 408
(b) = 409
42.43 = residual of account 42
43.41 = 602
43.13(a) = 410
(b), (c) = 411
(d) = 256−(410+411−429)
53.13(a) = 754
(b) = 762
52.23 = 753
53.43 = 751
64.11(a) = 501
(b) = 503
64.41 = 502
63.53(a), (b) = −662 (=505)

The numbering system of the items is based on the following numbering of sectors and types of account:

Sectors

1. enterprises
2. wage earners
3. pension and insurance funds
4. government
5. banking system, etc.
6. outside world

Types of account

1. product account
2. income account
3. capital account
4. consolidated account

The individual accounts are indicated by the number of the sector followed by the number of the type of account, and the individual groups of transactions or internal bookings by the number of the individual account for which the 'transaction' group constitutes a payable followed by the number of the individual account for which it constitutes a receivable. Item and counter item therefore always carry identical numbers. The first part of the numbers of all items on the debit side and the second part of the numbers of all items on the credit side of an individual account consist of the number of that account. The items are recorded in the order of the types of account on which the counter item appears and within that order in the order of the sector with which the transaction takes place. The connection between main transaction groups and types of account is clearly demonstrated in the items printed in italics in the semi-articulated national accounts.

The semi-articulated national accounts consist of the items printed in italics in the fully articulated national accounts for the main sectors, with

(a) all transfer items shown on balance on the credit side of the accounts concerned, and
(b) saving (+) and dissaving (−) appearing on the debit side of the national income account and on the credit side of the national capital account.

The (fully articulated) purely national accounts without sector breakdowns can be derived from the semi-articulated national accounts by

(a) retaining only the items printed in italics and deleting the detail, and
(b) deleting the transfer items which are all equal to zero (except international transfers).

APPENDIX II

ANALYSIS OF CHANGES IN THE TRADE BALANCE IN CURRENT PRICES

The change in a country's trade deficit in current prices between base year and current year can be analysed in a volume and a price component in at least two different ways, namely:

(1) by deflating imports and exports separately each by their own price index;

(2) by deflating the import surplus by the import price index, or—which amounts to the same thing—by deflating imports and exports both by the import price index.[1]

The basic difference between the two approaches is that under the first scheme exports are deflated by the export price index, whereas under the second scheme they are deflated by the import price index.

Denoting prices and quantities by the symbols p and q with superscripts i and e for imports and exports and subscripts o and 1 for base-year and current-year values, and measuring prices in such a way that $p_o^i = p_o^e = 1$, which implies expressing quantities in money terms at base-year prices, the change in the trade deficit between the base year and the current year can be analysed, along the lines indicated above, as follows:

$$(1) \quad (q_1^i p_1^i - q_1^e p_1^e) - (q_o^i - q_o^e) = \{(q_1^i - q_o^i) - (q_1^e - q_o^e)\} + \{q_1^i(p_1^i -) - q_1^e(p_1^e - 1)\}$$

or alternatively as:

$$(2) \quad (q_1^i p_1^i - q_1^e p_1^e) - (q_o^i - q_o^e) = \left\{\frac{q_1^i p_1^i - q_1^e p_1^e}{p_1^i} - (q_o^i - q_o^e)\right\} + \frac{q_1^i p_1^i - q_1^e p_1^e}{p_1^i}(p_1^i - 1)$$

It can easily be seen from these formulae that through the use of different deflators for exports the volume change in (1) differs from that in (2) by an amount equal to $q_1^e\left(1 - \frac{p_1^e}{p_1^i}\right)$ and likewise that the price changes in (1) and (2) differ by the same amount in the opposite direction.

Had the terms of trade not changed, in other words, had p_1^e been

[1] In paragraph 10 of the main body of this report deflation of the import surplus by the export price index is shown to be a possible alternative to this.

equal to p_1^i, the difference between (*1*) and (*2*) would have been zero and the same would apply to the price changes in both formulae. This suggests a third way of analysing the change in the trade deficit in current prices, namely by introducing the effect of the change in the terms of trade as a separate component. This effect is clearly equal to $q_1^e(p_1^i - p_1^e)$ for, had the export prices shown the same change as the import prices between base year and current year the export proceeds in the current year would have been $q_1^e p_1^i$ instead of $q_1^e p_1^e$. It should be noted that if positive the term $q_1^e(p_1^i - p_1^e)$ represents a loss which in itself has the effect of increasing the deficit and if negative it represents a gain. By introducing the effect of changing terms of trade as a separate component it becomes necessary to define the effects of changes in volume and price level more narrowly so as to exclude from those two components the effect of changing terms of trade. It has already been noted that the volume effect in the absence of changes in the terms of trade is equal to $\{(q_1^i - q_o^i) - (q_1^e - q_o^e)\}$. Likewise the price effect, had p_1^e been equal to p_1^i, is equal to $(q_1^i - q_1^e)(p_1^i - 1)$. Along these lines the change in the trade deficit in current prices may accordingly be analysed as follows:

$$(3) \qquad (q_1^i p_1^i - q_1^e p_1^e) - (q_o^i - p_o^e) = \{(q_1^i - q_o^i) - (q_1^e - q_o^e)\} + q_1^e(p_1^i - p_1^e) + (q_1^i - q_1^e)(p_1^i - 1)$$

The three formulae given above may be rewritten into one single formula in such a way that all the elements of change are shown separately and that through combination of these elements the components into which one wants to analyse the change in the trade deficit in current prices between base year and current year can be built up. This all-purpose formula is the following:

$$(4) \qquad (q_1^i p_1^i - q_1^e p_1^e) - (q_o^i - q_o^e) = \{(q_1^i - q_o^i) - (q_1^e - q_o^e)\} + q_1^e\left(1 - \frac{p_1^e}{p_1^i}\right) + q_1^e\left(1 - \frac{p_1^e}{p_1^i}\right)(p_1^i - 1) + (q_1^i - q_1^e)(p_1^i - 1)$$

In this formula the first term on the right-hand side represents the difference between the changes in the volume of imports and exports obtained by deflating the respective current-year values each by their own price index; the second term indicates the amount by which the first has to be adjusted if exports are deflated by the price index for imports; the third term measures the price effect of the second term with respect to the change in the import price index; the last term finally measures the price effect of imports and exports both with respect to the change in the import price index.

The table below shows through what combinations of terms on the right-hand side (numbered 1 to 4) the volume effect, price effect and terms of trade effect under the three different approaches discussed above can be obtained.

		1	2	3	4
Approach I:	volume	x			
	price		x	x	x
Approach II:	volume	x	x		
	price			x	x
Approach III:	volume	x			
	terms of trade		x	x	
	price				x

From this table it can be seen that the effect of the changes in the terms of trade forms part of the volume effect in the first approach and part of each of the volume and the price effect in the second approach. In analysing the change in the trade deficits in current prices, formula 4, which has the advantage of showing all four elements of change, may be of help in reconciling apparently conflicting statements on price and volume developments of trade deficits in real situations.

The justification for deflating exports by the import price index in in the second approach is that foreign trade may be considered as part of the productive process of an economy and that exports are thus not to be considered as an end-use item as in the first approach, but as a means of obtaining imports. The change in their import purchasing power (i.e. the volume of imports that can be obtained for a volume-unit of exports) should accordingly be measured by the change in the import price level rather than by the change in the export price level.

So far the units of measurement have been shown in such a way that $p_o^i = p_o^e = 1$. This is the appropriate choice of units if one wants to decompose the trade deficit in the current year into the trade deficit of the base year and the four elements of change indicated above. However, one can also choose to analyse the trade deficit in the base year in a similar way. For this purpose the units of measurement should be chosen in such a way that $p_1^i = p_1^e = 1$, which implies expressing quantities in money terms at current-year prices. The formulae to be applied for this analysis can easily be derived from the one given above by changing the subscripts *1* into subscripts *o* and vice versa.

APPENDIX III

COMPUTION OF CUMULATED COST QUOTAS

On page 274 of the main body of this report the desirability has been indicated of analysing that part of the total cost of a product consisting of product transfers, i.e. materials received from other productive sectors of the national economy (other industries), into the more basic elements of input: imports, capital consumption, wage-earning labour, non-wage-earning economic activity, indirect taxes and subsidies. This requires the computation of so-called cumulated cost quotas.

An example of the type of statement aimed at by this analysis is shown below:

Industry 1	Cost composition	Cost composition of materials received from:			Cumulated cost composition
		Industry 2	*Industry 3*	*Industry 4*	
1	2	3	4	5	6
Wages . .	40	6	3	2	51
Non-wage income	15	3	1	1	20
Indirect taxes .	10	2	2	1	15
Subsidies . .	−5	—	—	−2	−7
Capital consumption . .	5	1	—	—	6
Imports . .	10	1	2	2	15
Materials received	25	13	8	4	—
Total .	100				100

The basic difficulty in drawing up such a statement is that the transition from column 2 to column 6 already implies knowledge with regard to the cumulated cost quotas of the industries which deliver materials used by Industry 1. This difficulty, however, can be overcome by a method of calculation based on successive approximation.

Starting from a position in which we know the cost composition of each industry, as shown on the product accounts of these industries, on which materials received from other industries appear as one of the cost elements, we will assume here that all products of one and the same industry have exactly the same cost composition. This is only a simplifying assumption and in case we have any special knowledge as to the differing cost composition of different products of one and the same industry we may take advantage of this knowledge right from the start by breaking up the one industry into a number of

sub-industries each producing articles which indeed have the same cost composition. A clear example of this knowledge about differing cost composition of the individual products of one and the same industry is the differing incidence of taxes and subsidies (usually products for the home market carry a heavier burden of indirect taxes or are more strongly subsidised than those for exports; within the group of home market products those destined for private consumption are normally more heavily taxed than capital goods and intermediate products).

In calculating cumulative cost by successive approximation we proceed as follows. In the first round we assume the cumulated cost composition of the materials received by each industry to be the same as the known cumulated cost composition of the national output. The national output is the total output of all productive sectors combined, ignoring the product transfers which cancel out in the national total.

This first approximation of the cumulated cost composition of each separate industry (or sub-industry) enables the calculation of a second approximation by applying for each industry, to the cost element 'materials received' the preliminary cumulated cost quota of the delivering industries. A third approximation is made by applying in exactly the same way the results of the second approximation. This procedure is repeated until the results of the last and the last but one approximation do not differ any longer, even in the last decimal place. By then the final cumulated cost composition for each industry or sub-industry has been established and tables of the sort shown in paragraph 2 for Industry 1 can be constructed for each industry or sub-industry.

All end-use products, can be allocated to one of the industries or sub-industries, and this will enable us to establish not only the cumulated cost composition of the products of each industry but also that of groups of end-use products.

The exclusion of capital consumption from the basic input elements is effected in essentially the same way. Capital consumption can namely be considered as a product transfer from the sub-industries producing the capital goods which are being used up in the production of goods and services in other productive sectors of the national economy. In carrying out this calculation one should bear in mind that the commodity composition of capital consumption differs from that of gross capital formation, and that therefore the cumulated cost composition of the end-use item gross capital formation cannot be applied to the input element capital consumption.

This difference, by the way, also results in different price indices for capital consumption and gross capital formation. The weighting

pattern used in establishing the price index for capital consumption determined with reference to the (replacement) value of each type of fixed asset in the total value of the stock of all real capital used and the average lifetime of the assets concerned. The prices of the component parts of gross capital formation, on the other hand, should be weighted according to the share of the value of each type of fixed asset in the total gross capital formation.