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LABOUR FORCE DATA IN A NATIONAL ACCOUNTING FRAMEWORK *

Estimation of the Dutch interwar labour force

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Summary

The paper deals with the Dutch interwar labour force data. Starting with census data the estimation of the working and non-working labour force by industry and by occupational type is described and the results are discussed. The data have been estimated within the national accounts framework. It is the first time that labour market figures at a meso-level have been estimated which are linked to other national accounting figures.

Contents

1. Introduction

With regard to the labour force in the interwar years, only data for 1920 and 1930 are available from the censuses. Data for the other years have been estimated with the help of the integrating framework of national accounts. This approach draws its strength from the fact that all figures are mutually consistent. In this way, all kinds of consistency checks can be built in. The paper presents fully integrated estimates of the working and non-working labour force at a meso-level. Besides, for 1938 a Social Accounting Matrix (SAM) has been compiled. In a SAM framework detailed confrontations of e.g. income and labour market figures can be carried out. For 1938, labour force figures by industry and by household subgroup have been estimated.

This paper starts with a concise description of the data sources and the estimation methods. Section 3 deals with the estimation of the working and non-working labour force by industry and in section 4 the integration of the labour force data is described. In section 5 the results are presented and the final section provides some conclusions.

2. Data Sources and Estimation Methods

Main sources in estimating the Dutch interwar working and non-working labour force are:

- Population and Occupational Censuses.
  In the Netherlands, censuses were taken every ten years.[1] In the interwar period, they were carried out in 1920 and 1930. The census scheduled for 1940 was canceled because of the outbreak of World War II. The censuses provide data about the resident population at the end of the year. Together with the population censuses, occupational censuses were taken. They give, among other things, a breakdown of the labour force by industry, and for many industries the number of employed and self-employed persons. The censuses give no information about unemployment. Unemployed persons were classified according to the industry in which they were formerly employed;
- Statistics of the trade union unemployment insurance funds. These statistics provide, from 1906 on, unemployment data. Initially, the coverage was far from complete but this improved gradually, especially after the Unemployment Decree of 1917 was put into effect;
- Accident statistics of the National Insurance Institute ('Rijksverzekeringsbank') with information about employment (in man-years) by industry. These statistics are incomplete, for instance many industries which produce services were lacking;
- Poor Relief Statistics provide data on the number of unemployed people on relief. These unemployed were not workers who could receive benefits from the trade unions. Self-employed who became unemployed were often found in the poor-relief;
- Many unpublished data from the archives of Statistics Netherlands

The employed and unemployed people together form the labour force. Theoretically we can confront the data on the labour force, the employed and unemployed persons to compile consistent labour market figures. For the interwar period only incomplete information, based on different concepts is

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1. The series started in 1829 (in 1795 a special census was taken in the former Batavian Republic). The 1849 Census is the first one which gives labour force information. The latest Census was taken in 1971. After that year the opposition against the census had become so large and widespread that the Government decided not to hold a census anymore.

available. This implies that only under certain assumptions it is possible to construct time series for the labour force, employment and unemployment.

Broadly speaking the estimation method of the working and non-working labour force is as follows. Firstly, estimates of the (dependent) labour force by industry have been made. These estimates have been based on occupational censuses. Secondly, unemployment estimates have been made, mainly based on information from the unemployment insurance funds of the trade unions.

With the labour force and unemployment estimates employment by industry has been determined. In the paper we refer to this method as MLF (Method Labour Force). The results have been compared and integrated with information from other sources, mainly employment figures of the accidents statistics.

The industrial classification of the censuses of 1920 and 1930 has been adapted to the one currently in use in the Dutch national accounts: the Dutch Standard Classification of all Industrial Activities. In the text and the tables referred to by its Dutch acronym SBI. The relations between the classifications of the interwar occupational censuses, the SBI and the ISIC are given in Appendix II. In 1994 Statistics Netherlands has started to switch to the SBI 1993, which differs only slightly from the new ISIC Rev 3 as given in the System of National Accounts 1993.

Throughout the text we have used loosely the terms industry, industrial activity when we mean 1-digit (major division), 2-digit (division) or 3-digit (major group) industrial activities, because using all the official terms is rather cumbersome. If necessary we will provide further details.

3. Estimation of the Dutch Interwar Working and Non-working Labour Force

3.1. The Labour Force

The total labour force in the 1920s has been estimated by interpolation between 1920 and 1930. For the 1930s, the 1947 Occupational Census has been used as well. The years were estimated by interpolation based on the assumption that the Second World War did not disturb the development of the labour force, which is confirmed by the figures of the 1947 Occupational Census[2]. For 1920, 1930 and 1947 the percentages of males and females with a profession were determined. For males this percentage was 61.3% both in 1920 and 1930 and 61.0% in 1947. For females the number of potential labour market participants increased from 18.2% in 1920 to 19.1% in 1930 and 19.5% in 1947. The percentages for the intermediate years were determined by log linear interpolation after which the size of the male and female labour force was calculated. The figures for those years show only minor differences between the participation rates. Since the other years were determined by interpolation, the shares of the total labour force in the total population show a stable picture.

This is caused by diminution of the population growth, especially in the second half of the 1930s. This diminution is a consequence of the substantial emigration surplus in those years (viz. table A3.1 in the statistical annex). The average annual growth of both population and labour force for the years 1939-47 is almost the same as in the years 1930-39.

We have made two different approaches to a breakdown of the labour force. The first one looks at the status of the worker, the second one at the occupation of the worker in the industries. About the definition of the status we refer to the SNA 1993. As for industries and occupations we refer to the Dutch SBI and the occupational censuses of 1920, 1930 and 1947.

3.1.1. The Status of the Worker

A breakdown of the labour force into wage labourers (dependent labour

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2. The fact that the latter was held on 31 May and not on 31 December is thought to have a neglectable influence on the calculations for the years 1931-39.

force) and self-employed persons can be derived from the occupational censuses. They give us the division of the labour force by occupational position, as stated in table 1.

Table 1. Labour force by occupational status according to the classification of the 1920 and 1930 Occupational Censuses

Group 1
Persons, properly belonging to the enterprise, of whom:
A. Self-employed managers
B. Employed managers
C. Senior personnel, foremen, etc.
D. Common workers
Group 2
Persons, not properly belonging to the enterprise, viz.:
1. Administrative personnel
2. Technical personnel
3. Warehouse personnel
4. Machinists
5. Stokers
6. Drivers
7. Chauffeurs
8. Bargees
9. Skilled personnel (maintenance personnel etc.)
10. Unskilled personnel (maintenance personnel etc.)

Only the self-employed managers (A) of group 1 are not considered to be employees, while all persons in the other categories are. Both occupational censuses also give a breakdown of group 2 for the 29 industries distinguished at that time. The persons of group 1 are only given for the industries I through XXIII. This means, for instance, that the 1930 occupational census for more than 550,000 persons, that is just over 17% of the labour force, does not indicate whether or not they are wage labourers. In this study, the number of self-employed persons and employees has been estimated for all industries. To determine its status the labour force has been divided into five types of occupation: agricultural labourers, blue collar workers, white collar workers, farmers and (other) self-employed persons. The 1920 and 1930 Occupational Censuses do not really distinguish between them, but on basis of these censuses and with some assumptions it was possible to typify the labour force. How the problems were solved is described in Appendix I.

3.1.2. The Occupation of the Worker

In the 1920 and 1930 Occupational Censuses occupations are classified according to the kind of enterprise in which they are practised. Similar

enterprises were combined into groups of industrial activities, many times in their turn on different aggregation levels. Twenty nine industrial activities were distinguished, divided into 430 groups. To give an example the Textile industry has been comprised from 31 subgroups (e.g. wool mills). In the censuses every practiser of an occupation counted, no matter age, sex or marital status. It's a pity the censuses don't provide us with unemployment data. There was a question about unemployment status in 1930, but we have not been able to dig up the results. They seem to have been lost. Anyhow, the unemployed persons have been classified according to the industrial activity they were being employed by before they lost their job.

The industrial classifications of 1920 and 1930 have been adapted to classifications of the SBI 1974. In most cases this was easy: just a matter of transferring a group from one major activity to another. But in several cases a split-up of an activity was needed. For example butchers had to separated from, meat-processing factories, shoemakers from shoefactories to which they belonged.

A separate problem were the conscripts. In the 1920 and 1930 Occupational Censuses, the conscripts were classified in the industries in which they formerly practised their profession. In our current estimates they are classified under government. The number of conscripts was taken from De Jong (1969). The conscripts were assigned to the industries according to the division of the male labour force whereby persons employed in religion were ignored because they were exempt from military service (on the basis of the Military Service Law 1922).

In the Occupational censuses held after the Second World War, persons living in contemplative convents have been excluded. For consistency reasons, the figures of the 1920 and 1930 Occupational censuses have been corrected: 3130 persons in 1920 and 6574 in 1930.

3.1.3. The Dependent Labour Force

The dependent labour force for the years without a census has been estimated by interpolation. The ratio between the dependent and the total

labour force was determined from the 1920 and 1930 estimates. The intermediate years were determined by log linear interpolation. For the years 1930-39, the interpolation procedure is severely hampered by the fact that the 1940 Census had to be canceled because of the Second World war. The next year for which data were available was 1947. The period between 1930 and 1947 is a rather long one and is strongly influenced by the war. Still we had to make the best of the 1947 figures. We were helped by a publication of the CBS (CBS, 1966) in which labour force censuses from 1849 through 1960 had been made comparable. The total labour force of 1947 and the development of the dependent labour force between 1930 and 1947 were derived from this source. Starting with our estimate of the dependent labour force in 1930 this resulted in a new estimate for 1947. Now a new ratio of the dependent labour force to the total labour force could be calculated. The ratios of the years between 1930 and 1947 were compiled by log linear interpolation. Using these ratios and the estimates of the total labour force the size of the dependent labour force in the interwar period was determined. Table A3.1 gives the total and the dependent labour force for the interwar period.

The new estimates of the dependent labour force by industry for 1921-39 are presented in table A3.4 in the statistical annex.
The total labour force was broken down by industry by the following method.

3.1.4. The Estimates by Industry

The average annual growth for each industry in the 1920s was calculated using the estimates of the dependent labour force by industry for 1920 and 1930. The dependent labour force by industry for 1920-29 has been calculated with these growth rates, starting in 1920. The total dependent labour force was found by adding up these estimates. This total was confronted with the total dependent labour force, calculated from the total labour force. The difference between both totals was proportionally assigned to the separate industries.

For the 1930s, an interpolation procedure is hampered by the fact that

the 1940 Census was canceled. The next year for which data of the labour force are available is 1947. This data comes from the Occupational Census. The period between 1930 and 1947 is a rather long one and is strongly influenced by the Second World War. However, the total (dependent) labour force in the 1930s has been estimated by interpolation. This is acceptable for such high levels of aggregation. Because of the lack of an alternative method, the labour force by industry has been estimated with an interpolation procedure as well. To this end, the 1947 data of the Occupational Census has been made comparable with those for 1930. Comparable figures of the total labour force by industry are given in CBS (CBS, 1966, table 1). For the dependent labour force only figures for eight industry groups are presented (CBS, 1966, table 2). On the basis of these figures it can be concluded that the developments of the total and the dependent labour force were roughly the same. This is also shown by our estimates for 1920 and 1930.

In the first place, the dependent labour force by industry for 1939 has been estimated. The labour force by industry for 1930 and 1947 are given in CBS (1966). However, these data are not comparable. In the 1930 data of the total labour force by industry, the unemployed persons are included in the industry to which they formerly belonged, but in the 1947 data this was not the case. These persons are included in the data for eleven branches of industry which are given in CBS (1966, table 2). Besides, on an industry level no data are given for the groups casual labourers and persons with an unknown profession (in our study one group) in CBS (1966). The unemployed persons and the conscripts were divided according to the industry data without these groups. This has been done on the basis of the male labour force.

An average annual growth of the labour force has been calculated with the 1930 labour force data form CBS (1966). Starting with our 1930 estimates, the 1939 labour force by industry was determined with the help of these figures. There was a sharp increase in (military) civil servants just before, during and after the Second World War. Therefore, interpolation could not be used to estimate the number of civil servants. Instead an autonomous estimate of the number of civil servants was made on

the basis of De Jong (1969).

The method used for 1921-29 has been used for 1931-38 as well. The dependent labour force by industry in 1947 has been determined in the same way. It is assumed that the development of the dependent labour force by industry was the same as the development of the total labour force by industry. Then, the dependent labour force by industry for 1931-39 has been estimated with the same method as for 1921-29. The Occupational Censuses concern information at 31 December. These data have been recalculated to annual averages.

In accordance with the international national accounts guidelines the municipal cleansing departments, the public works and the unemployments relief projects have been classified as governmental. Data about these groups were taken from the National Insurance Institute.

Table A3.4 in the statistical annex presents our estimates of the dependent labour force by industry for 1921-39. In the course of time, the relative importance of agriculture and fisheries declined and that of services increased. The increase of services between 1930 and 1947 was caused mainly by a strong increase in civil servants. Government labour force doubled between 1930 and 1947. This increase was a consequence of the Second World War. For instance, during the war extra personnel was needed to set up and implement a rationing system. Besides, in 1947 there were 160,000 conscripts against 10,000 in 1930. Most other service industries show a relative decrease of the number of wage labourers. A relative strong increase of the dependent labour force occurred in the metal industry: between 1930 and 1947 an increase from 7.4% to 8.9%. Between 1920 and 1930, in trade hotels etc. and repair of consumer goods the percentage increased by more than two percent points to 10.9% in 1930.

3.2. Unemployment

A detailed description of the estimation of the Dutch interwar unemployment figures is presented in Den Bakker (1994). In this section a bird's eye view of the estimation method is given.

From the data of the unemployment funds of the trade unions, unemployment percentages by industry are determined. These percentages apply only to those employees who contributed to the unemployment funds. On average, about 30% of the employees were affiliated with those funds. However, this affiliation percentage varied very much for the separate industries. The unemployment percentages of employees who were not members of the unemployment funds have been assumed to be identical to those of members. In case there was no information from unemployment funds for a certain industry, percentages have been established on the basis of comparable industries. Combining these percentages with the labour force estimates, unemployment for the industries has been estimated. To estimate the unemployment for self-employed people, the Poor Relief Statistics have been used. The results are shown in table A3.3 in the statistical annex. Total unemployment (unemployment among wage labourers plus unemployment among self-employed people) is presented in table A3.2.

4. Integration of the Labour Data in a National Accounting Framework

4.1. The Year 1930

The accident statistics of the National Insurance Institute provides data on employment for the years 1921-39. In this period, an Occupational Census was held in 1930. For that year a direct confrontation between the accident statistics and MLF is possible. In 1930, unemployment was relatively low (5.4% of the dependent labour force), so our assumptions in the estimation of unemployment play a neglectible role. The accident statistics provides only usable information for enterprises in part of the industries. The occupational censuses give data for agriculture and services as well. Table 2 presents employment according to both sources. However, both sources are not fully comparable. The definitions and classifications are not always the same and the occupational censuses give numbers of persons at the survey data while the accident statistics gives man-years. This means that the figures of the occupational census should be higher than the ones of the accident statistics. In most of the industries this is the case, see table 2.

In the revision, for 1930 the employment data of the occupational census has been accepted. An important advantage is that this source provides data for all industries.

Table 2. Employment by industry, according to the Accident Statistics and the Occupational Census, 1930

SBI		(1) Accident statistics	(2) Occupational Census	(3) (2)-(1)	(4) (3) in % ((1)+(2))/2
		x 1000			%
0	Agriculture and fishing		356.7		
1	Mining and quarrying	43.7	49.1	5.4	11.6
2/3	Manufacturing	617.0	656.2	38.8	6.1
	of which:				
20/21	Food, beverages and tobacco industry	149.8	158.4	8.6	5.6
22	Textile industry	73.3	74.4	1.1	1.5
23	Wearing apparel industry	48.2	64.9	16.7	29.5
24	Leather and footwear industry	18.5	15.9	-2.6	-15.1
25	Wood and furniture industry	42.0	44.7	2.7	6.2
26	Paper and paper products industry	15.3	14.8	-0.5	-3.3
27	Printing and publishing industry	34.9	38.2	3.3	9.0
28/31	Petroleum and chemical industry	33.7	28.7	-5.0	-16.0
32	Building materials industry	36.4	38.0	1.6	4.3
33/37	Metal industry	157.6	169.7	12.1	7.4
38/39	Industrial manufacturing n.e.c.	7.8	8.4	0.6	7.4
4	Utilities	22.3	23.1	0.8	3.5
5	Construction	164.1	181.0	16.9	9.8
6	Trade, hotels etc., repair of consumer goods		261.9		
7	Transport, storage and communication		214.3		
81/82	Banking and insurance		44.3		
83/99	Services n.e.c. except		383.0		
90,92	General government		179.9		
Subtotal industry (SBI 1-5)		847.4	909.5	62.1	7.1
Subtotal services			1083.4		
Total			2349.5		

4.2. The 1920s

Although the accident statistics of the National Insurance Institute date from 1904 and the number of enterprises in the statistics rose continuously in the 1920s, it was only in the 1930s that an almost complete coverage was achieved. A comparison of the development of employment between 1920 and 1930 according to the accident statistics and MLF shows that the former produces a much greater increase of employment.

Table 3 presents the development of employment by industry according to the accident statistics and and MLF between 1921 and 1930 (the data of the accident statistics for 1920 are too incomplete to use in this comparison).

The rise of total employment in industry according to the accident statistics is 26.6%. This is very high considering the growth of the population in this period: 14%. In the 1920s, the participation rate was stable and unemployment was rather stable as well. This means that a rise in industry employment of almost 27% is only possible if in the 1920s employees shifted en mass from agriculture and services to industry. The data of the 1920 and 1930 Occupational Censuses do not point in that direction. The share of the labour force in industry rose from 35% to 40%.

The increase of total employment in industry between 1921 and 1930 is 18.4%, according to MLF. This is much more in line with the population growth than the figures of the accident statistics.

In the revision for the 1920s we have used the figures estimated based on MLF. These data are more plausible than those of the accident statistics. Besides, this method yields data for all industries which makes a complete picture of the economy possible.

Table 3. Employment by industry, according to the Accident Statistics and the Occupational Census, 1930

SBI		Occupational Census	Accident Statistics
		1921 = 100	
1	Mining and quarrying	112.6	138.6
2/3	Manufacturing	116.8	129.0
	of which:		
20/21	Food, beverages and tobacco industry	123.0	132.6
22	Textile industry	120.4	121.9
23	Wearing apparel industry	90.7	137.5
24	Leather and footwear industry	126.6	133.3
25	Wood and furniture industry	109.7	120.9
26	Paper and paper products industry	136.3	143.4
27	Printing and publishing industry	119.9	126.9
28/31	Petroleum and chemical industry	165.4	143.2
32	Building materials industry	113.3	108.6
33/37	Metal industry	118.0	132.1
38/39	Industrial manufacturing n.e.c.	93.3	105.4
4	Utilities	105.4	107.9
5	Construction	128.7	119.2
Total industry (SBI 1-5)		118.4	126.8

4.3. The 1930s

In the accident statistics of the 1930s a discontinuity appears in 1931. In this year 14000 enterprises with only (unpaid) children as employees were removed. The number of persons which are not in the statistics in this year is even greater. The discontinuity in the accident statistics has been eliminated by using the MLF mutation from 1930 to 1931 instead of the mutation according to the accident statistics. Table 4 presents both estimates.

Table 4. Employment by industry, according to the Accident Statistics and Occupational Census, 1939

SBI		Occupational Census	Accident Statistics
		1930 = 100	
1	Mining and quarrying	97.3	84.0
2/3	Manufacturing	97.1	97.4
	of which:		
20/21	Food, beverages and tobacco industry	88.5	97.4
22	Textile industry	93.5	93.2
23	Wearing apparel industry	104.9	110.8
24	Leather and footwear industry	89.1	122.2
25	Wood and furniture industry	80.1	126.5
26	Paper and paper products industry	94.8	76.3
27	Printing and publishing industry	98.8	108.5
28/31	Petroleum and chemical industry	113.8	92.0
32	Building materials industry	73.5	77.2
33/37	Metal industry	110.9	94.6
38/39	Industrial manufacturing n.e.c.	101.6	106.4
4	Utilities	122.2	100.3
5	Construction	81.4	84.2
Total industry (SBI 1-5)		102.8	94.2

The decrease in employment in manufacturing is about the same for both methods, 2.9% and 2.6%. In construction both methods give about the same results as well. Within manufacturing the estimates according both methods differ in some cases. At lower aggregation levels the MLF gives less reliable estimates than the data of the accident statistics, especially when high unemployment occurs (as in the 1930s). For the 1930s we maintained the data of the accident statistics for the development of employment in industry.

4.4. Integration: the Interwar Labour Data

As stated before, the labour market estimates are an integrated part of the revised national accounts for the interwar period. With the labour force and unemployment estimates, employment by industry has been determined. The results have been compared and integrated with information from other sources, e.g. the accident statistics of the National Insurance Institute. This confrontation is not an easy one. For example, the occupational censuses give numbers of people at a certain date, while the National Insurance Institute measures employment in terms of man-years. Besides, the data of the accident statistics are incomplete; only in the course of the 1920s most enterprises in the industries were included. But still and all, many industries which produced services were lacking. Another problem is that the classifications of the enterprises in the industries used by the various sources were quite different and had to be adapted to the present one. In the integration proces many plausibility checks have been carried out, such as developments in value added and wages and salaries per worker, productivity trends, the distribution of income and outlay over household categories (classified according to the occupation of the breadwinner), etc.

In the integration process the year 1930 plays a key role for the level of the variables. For 1930 the labour force data of the occupational census are maintained for two reasons. The census provides data for all industries and the level of employment in industry is in accordance with the figures of the accident statitics. Starting with the 1930 data, the figures for the 1920s and 1930s have been estimated in a different way.

For the 1920s, the data of MLF are maintained. For the 1930s, the developments of employment in industry according to the accident statistics are kept (with the corrected 1931 figures). To arrive at estimates for the whole economy these accident statistics data were integrated with the MLF estimates. This was done as follows. The developments according to the corrected accident statistics were used, starting with the 1930-levels according to MLF. With the MLF-unemployment rates the dependent labour force in manufacturing and in construction was determined. These estimates differed but little from the totals of MLF. The latter are reliable at

relatively high aggregation levels, so they are maintained. The relatively little differences between both totals have been spread over the industries within manufacturing. Then unemployment in industry have been calculated again.

5. Results: The Dutch Labour Force in the Interwar Period

5.1. Population and Labour Force

Population and labour force data for three interwar years are presented in table 1. For purpose of comparison, data for 1947 are given as well. Figures for all interwar years are shown in table A3.1 of the statistical annex. In 1920, the Netherlands had a population of over 6.5 million people. In the interwar period the population increased by almost 2 million people. The growth rate of the population in the years 1920-39 was not constant. The average annual growth in the 1920s was 1.4%, with the highest annual growth rates in the years 1922-24: 1.6%. In the 1930s the average annual growth was 1.2%. Especially in the second half of the 1930s there was a substantial emigration surplus which caused a lower population growth (CBS, 1959). In the years 1936-38 the annual growth was only 1.0%.

Table 5. Population and (dependent) labour force (annual averages)

	1920	1930	1939	1947[1)]
	x 1000			
Population	6848	7884	8781	9625
Labour force	2713	3157	3528	3866
Dependent labour force	2178	2486	2785	2996
	%			
Labour force as a percentage of the population	39.6	40.0	40.2	40.2
Dependent labour force as a percentage of the labour force	80.2	78.7	79.5	77.5
Average annual growth of the labour force		1.5	1.2	1.1

1) 31 May.

Because the participation of the population in the labour force did not change very much (see tabel 5)[3], the average annual growth of the labour force was lower in the 1930s (1.2%) than in the 1920s (1.5%). In the interwar period, the ratio between wage labourers and self-employed people remained fairly stable. In 1920, 19.8% of the labour force was self-employed. In 1930, this percentage was 21.3% and in 1939 it was only a little lower: 20.5%.

3. The male participation rate in 1920 and 1930 was 61.3% and 61.0% in 1947. The female participation rate in 1920, 1930 and 1947 was 18.2%, 19.1% and 19.5% respectively.

Table 6 presents the dependent labour force by industry for 1920, 1930, 1938 and 1939. Table A3.4 of the statistical annex shows the dependent labour force for all industries and all interwar years. In the course of time, the relative importance of agriculture and fishing declined from 19.4% in 1920 to 14.6% in 1939. The share of services increased from 43.1% in 1920 to 45.2% in 1938 and 47.6% in 1939. The increase of the share of services from 1938 to 1939 was caused by a strong increase in government military personnel. This was a result of the threat of war in the late 1930s. The share of government employees rose from 7.8% in 1938 to 11.9% in 1939. Between 1920 and 1938, in trade, hotels etc. and repair of consumer goods the percentage increased from 8.8% to 11.1%.

Table 6. Dependent labour force by industry as a percentage of the total dependent labour force

SBI		1920	1930	1938	1939
0	Agriculture and fishing	19.4	15.7	15.3	14.6
1	Mining and quarrying	2.1	2.0	1.6	1.5
2/3	*Manufacturing*	27.7	28.4	29.6	28.3
	of which:				
20/21	Food, beverages and tobacco industry	6.3	6.7	6.7	6.3
22	Textile industry	3.0	3.2	3.6	3.5
23	Wearing apparel industry	3.5	2.8	3.1	3.2
24	Leather and footwear industry	0.6	0.7	1.0	0.9
25	Wood and furniture industry	2.0	2.0	1.9	1.7
26	Paper and paper products industry	0.5	0.6	0.7	0.7
27	Printing and publishing industry	1.5	1.6	1.5	1.4
28/31	Petroleum and chemical industry	0.8	1.3	1.3	1.2
32	Building materials industry	1.7	1.7	1.6	1.5
33/37	Metal industry	6.9	7.4	7.7	7.5
38/39	Industrial manufacturing n.e.c.	0.8	0.6	0.4	0.4
4	Utilities	1.0	0.9	0.8	0.8
5	Construction	6.7	8.2	7.6	7.1
6	Trade, hotels, cafés, restaurants, repair of consumer goods	8.8	10.9	11.1	10.6
7	Transport, storage and communication	9.7	9.2	8.8	8.4
81/82	Banking and insurance	2.0	1.8	2.0	1.9
83/99	Business services n.e.c. except	14.8	15.7	15.5	14.8
90,92	General government	7.8	7.3	7.8	11.9
Subtotal industry (SBI 1-5)		37.5	39.5	39.6	37.8
Subtotal services		43.1	44.8	45.2	47.6
Total		100.0	100.0	100.0	100.0

5.2. Employment by Industry

Detailed employment figures by industry can be founf in table A3.5 in the statistical annex. After a gradual expansion in the twenties, total employment in 1930 was 13.5% above the 1921 level. After this peak, employment plunged to a much lower level and reached rock bottom in 1933, almost 14% below the 1930 level and even 2.3% below the 1921 one. Employment showed a cautious recovery in the years 1934-36 and grew strongly in the last three interwar years. However, it was only in 1939 that the 1930 employment level was surpassed. In this year, total employment was 3.5% above the 1930 level. Table 7 shows the fluctuations in employment. There were great differences in employment development between industries.

Table 7. Employment among wage labourers by major division of industry, index numbers

SBI		1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
		1921=100									
0	Agriculture and fishing	94.6	84.9	70.7	67.6	78.2	76.6	80.9	83.1	84.1	85.4
1	Mining and quarrying	110.6	109.3	96.2	87.2	83.6	76.8	81.9	91.1	93.9	91.8
2/3	Manufacturing	117.0	109.6	92.8	93.2	96.1	93.8	97.5	109.5	113.5	120.9
4	Utilities	105.4	107.2	103.8	103.0	102.5	101.4	98.9	98.1	100.4	103.4
5	Construction	128.7	118.8	88.4	89.4	90.2	81.5	76.9	87.5	99.3	107.8
6/9	Services	117.2	116.3	115.4	114.3	115.7	114.9	114.0	116.2	119.3	131.4
Subtotal industry (SBI 1-5)		118.5	111.2	92.5	92.5	94.5	90.8	92.9	104.1	109.4	116.4
Total		113.5	108.7	98.8	97.7	101.0	99.0	100.2	105.7	109.2	117.5

Industrial employment fluctuated more than total employment. In the 1920s, industrial employment rose by 18.5%. Afterwards, employment fully collapsed within two years. Between 1930 and 1932 employment fell with almost 22%, especially caused by declines in metal industry (36%) and in construction and related industries (over 30% as well).

In services, employment decreased only 2.5% in the first years of the thirties while the increase between 1933 and 1939 was almost 15%. However, the latter was mainly caused by the 10% increase from 1938 to 1939. This was primarily caused by the military mobilization on the eve of the Second World War. But apart from the influence of the war, employment in services increased relatively strong: in 1938 employment was already 1.8% above the

1930 level.

Agriculture and fishing was the only industry with a 1930 employment level under (3.2%) the 1921 level. From 1930 to 1933 employment decreased further with 28.5%. Afterwards, employment in agriculture and fishing rose but in 1939 the employment was still under the 1930 level (9.7%).

In the 1920s, the highest accruement of employment (28.7%) took place in construction. Afterwards, this industry showed a dramatic fall in employment: over 40% from 1930 to 1936. There was a recovery in the late 1930s, but in 1939 employment in construction was still 16.2% below the 1930 level.

Table 8 presents the annual changes of industrial employment in the first half of the 1930s (tabel A3.6 in the statistical annex presents the figures for the whole interwar period and for all industries) changes of These figures show the dramatic decline in employment in the 1930s. Before, in the 1920s there was a continuous expansion of employment with an annual average increase of more than one percent, only in 1921 and 1922 employment fell in many industries. The greatest annual increase of total employment occurred in 1924: 2.9%.

In 1930 overall employment rose by 1.3%. However, in some industries the crisis had already started. For instance, employment in the metal industry declined by 2.8% and in industrial manufacturing n.e.c. even by 32.6% (the greatest annual decrease in the interwar period). After 1930, employment started to decline. The greatest downfall in overall employment took place in 1932: 9.1%. In that year, employment in construction fell by almost 26% and in the supplying building materials industry the decline was enormously as well. The metal industry suffered heavily too as employment fell by 26.6%.

After a recovery in 1934, on average 3.4%, employment dropped again in 1935, especially in construction and related industries, metal industry and in transport, storage and communication.

From 1936 onwards, employment improved. In construction and transport the recovery started one year later. In 1937, total employment rose by 5.5%. However, there were great differences between the industries. For instance, in metal industry employment increased by 27.6%. In construction the increase was about 14%. Enterprises in transport and communication took advantage of the improved economic activities: employment rose by 6.4%.

In 1938, the recovery of employment continued, but less markedly. In the last pre-war year, the increase in employment was, on average, 7.6%. In this year the employment in general government rose by 55.3%. This increase concerned mainly military personnel.

Table 8. Industrial employment among wage labourers, annual changes

	1930	1931	1932	1933	1934	1935
	%					
1 Mining and quarrying	2.0	-1.1	-12.0	-9.4	-4.1	-8.1
2/3 Manufacturing	-0.9	-6.3	-15.3	0.4	3.1	-2.3
of which:						
20/21 Food, beverages and tobacco industry	1.2	-0.9	-7.7	-1.0	0.2	-1.5
22 Textile industry	-2.4	-6.3	-18.0	3.5	5.3	1.0
23 Wearing apparel industry	0.4	-2.5	-6.2	0.5	0.4	0.5
24 Leather and footwear industry	1.3	-4.8	-5.7	7.1	-0.5	9.6
25 Wood and furniture industry	-2.3	-11.5	-24.0	1.7	-0.5	-6.6
26 Paper and paper products industry	3.5	-0.6	-7.5	2.0	1.8	0.5
27 Printing and publishing industry	2.0	-1.0	-5.2	-2.6	-0.4	-0.6
28/31 Petroleum and chemical industry	5.7	-2.1	-8.2	-1.8	-1.5	-5.7
32 Building materials industry	1.3	-9.2	-27.7	3.3	5.8	-11.0
33/37 Metal industry	-2.8	-12.7	-26.6	-0.3	9.3	-5.4
38/39 Industrial manufacturing n.e.c.	-32.6	-20.6	-15.6	11.1	21.7	2.7
4 Utilities	0.3	1.8	-3.2	-0.8	-0.5	-1.0
5 Construction	4.6	-7.7	-25.6	1.1	1.0	-9.6
Total industry (SBI 1-5)	0.3	-6.1	-16.8	-0.1	2.2	-3.9

Tabel 9 presents for the beginning, the middle and the end of the interwar period, employment among wage labourers as a percentage of the total employed wage labourers. The share of agricultural workers declined from 19.0% in 1920 to 13.2% in 1939. For the services a reverse development occurred, an increase from 43.9% to 50.0%. However, in 1939 the increase of the number of military civil servants played a role. The share of the later rose from 1938 to 1939 by 44.2%. But even apart from this military built-up, the figures for 1938 show that the increase of the relative employment in services is undeniable. From 1920 to 1938 relative employment in trade, hotels etc., rose by 32.2% and in business services n.e.c. by 17.6%. Only

the share of transport, storage and comunication reduced from 9.5% in 1920 to 7.3% in 1938.

Table 9. Employment by industry as a percentage of total employment

SBI		1920	1930	1938	1939
		%			
0	Agriculture and fishing	19.0	15.2	14.0	13.2
1	Mining and quarrying	2.1	2.0	1.8	1.6
2/3	Manufacturing	27.4	28.0	28.2	27.9
	of which:				
20/21	Food, beverages and tobacco industry	6.1	6.8	6.6	6.3
22	Textile industry	3.0	3.2	3.4	3.6
23	Wearing apparel industry	3.5	2.8	3.1	3.3
24	Leather and footwear industry	0.6	0.7	0.8	0.8
25	Wood and furniture industry	2.0	1.9	1.5	1.4
26	Paper and paper products industry	0.5	0.6	0.7	0.7
27	Printing and publishing industry	1.5	1.6	1.6	1.4
28/31	Petroleum and chemical industry	0.8	1.3	1.3	1.2
32	Building materials industry	1.7	1.6	1.2	1.2
33/37	Metal industry	7.0	7.2	7.6	7.6
38/39	Industrial manufacturing n.e.c.	0.6	0.4	0.4	0.4
4	Utilities	1.0	1.0	1.0	0.9
5	Construction	6.5	7.7	6.2	6.2
6	Trade, hotels, cafes, restaurants, repair of consumer goods	9.0	11.1	11.9	11.0
7	Transport, storage and communication	9.5	9.1	7.3	6.9
81/82	Banking and insurance	2.1	1.9	2.2	2.0
83/99	Business services n.e.c. except	15.3	16.3	18.0	16.4
90,92	General government	8.0	7.7	9.5	13.7
Subtotal industry (SBI 1-5)		37.1	38.7	37.2	36.8
Subtotal services		43.9	46.1	48.8	50.0
Total		100.0	100.0	100.0	100.0

5.3. Unemployment by Industry

The development of employment is counterbalanced by the unemployment trend. Table A3.7 of the statistical annex presents our estimates of unemployment amomg wage labourers, classified according to the industry where they were formerly employed. The unemployment percentages were by far the lowest in the service industries, roughly half of that in the other two groups.

A subdivision of unemployment by industry where the unemployed were employed in the past shows great differences, as shown in table A3.7 in the statistical annex. In the peak year 1936, the unemployment rate in industry

(SBI 1-5) was almost 1½ as high as the average and even 2½ as high as in the service industries. Within industry, the unemployment rate in mining and quarrying was substantial below the average. On the other hand, in construction and related industries, unemployment was very high: half of the workers (!) in those industries were unemployed in 1936.

Within manufacturing the differences were large too. Substantially above manufacturing average are metal, building materials, wood and furniture industry and in industrial manufacturing n.e.c. The highest interwar unemployment rate occurred in industrial manufacturing n.e.c.: 57.9% in 1932. In the peak year 1936 the percentage was the highest in the building materials industry. Of course, this industry exhibits the same picture as the construction industry. Generally, the unemployment rate in service industries was lower than in industry. An exception were the transport, storage and communication enterprises which are dependent of the activities of other industries. In 1936, the percentage in that industry (above 36%) was even more the the average in manufacturing (32.6%).

In most industries the unemployment was the highest in 1936, but for example in agriculture (1933) and the metal industry (1935) the maximum occurred earlier. In a few industries the 1936 peak was preceded by a (lower) maximum in the first half of the 1930s. This was the case in construction and related enterprises, where a peak in 1932 was followed by a decline and a maximum in 1936. We assumed, that in utilities and general government unemployment did not occur.

Table 10. Unemployment among wage labourers by industry in which they were formerly employed, as a percentage of the dependent labour force

	Average rate 1920-29	Average rate 1930-39	Peak rate 1920-39	Year of peak
	%			
0 Agriculture and fishery	8.1	24.8	36.4	1933
1 Mining and quarrying	2.5	11.1	22.7	1935
2/3 Manufacturing	7.4	22.6	31.7	1935
of which:				
20/21 Food, beverage and tobacco industry	6.2	14.6	19.4	1936
22 Textile industry	3.5	22.2	33.5	1935
23 Wearing apparel industry	8.4	16.7	22.7	1936
24 Leather and footwear industry	6.7	21.3	34.6	1938
25 Wood and furniture industry	8.6	34.3	46.7	1936
26 Paper and paper products industry	6.5	14.6	20.0	1936
27 Printing and publishing industry	6.5	14.6	20.0	1936
28/31 Petroleum and chemical industry	7.2	23.0	32.3	1935
32 Building materials industry	8.2	33.8	53.5	1936
33/37 Metal industry	8.3	27.9	42.6	1935
38/39 Industrial manufacturing n.e.c.	20.8	42.6	60.1	1932
4 Utilities	0.0	0.0	0.0	
5 Construction	11.9	33.0	47.0	1936
6 Trade, hotels etc., repairs of consumer goods	3.7	10.1	13.2	1936
7 Transport, storage and communication	6.0	26.3	36.4	1936
81/82 Banking and insurance	3.4	8.2	10.5	1933
83/99 Business services n.e.c. except	1.1	3.1	4.1	1936
90,92 General government	0.0	0.0	0.0	
Subtotal industry (SBI 1-5)	7.9	23.6	32.8	1935
Subtotal services	2.7	9.0	12.3	1936
Total	5.6	17.2	22.6	1935

6. Conclusions

A major part of the revision of the Dutch interwar national accounting data concerns an integrated estimation of the working and non-working labour force by industry. In this paper the estimation methods of the labour data were described and the results were presented.

The improved statistical description of the interwar period makes it possible, for the first time, to describe and interprete interwar economic history from the analytical framework of the national accounts. The new labour data makes it possible, for instance, to study the trends of employment and unemployment at a meso-level.

Since the statistical description of the years 1921-39 is consistent with the one for recent years, comparative analysis can be carried out, for example juxtaposing the unemployment of the 1930s on the one hand and the unemployment of the 1980s on the other.

The 1930s were the years of the deep economic crises. The depression manifested itself most strongly by a decrease of employment in all industries. In the Netherlands, total employment reached an interwar peak level in 1930. Afterwards, employment plunged to a much lower level. In 1933, employment was already 14% below the 1930 level.

In most industries the unemployment was at its highest in 1936. In this year, for instance, half of the workers in construction and related industries were unemployed.

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Appendix I. Data Sources and Estimation Method for determining the 1930 and 1938 Labour Force by Type of Occupation and by Industry

1. Introduction

In the revision of the Dutch interwar national accounting data a Social Accounting Matrix (SAM) for 1938 has been compiled (see Den Bakker, De Gijt and Keuning, 1994). To compile this SAM households should be classified according to the occupation of the breadwinner. This information is not available for 1938, nor for any other interwar year. This appendix presents the estimation method we have used to classify the labour force into occupational categories.

In the occupational census of 31 December 1930 the labour force is not distinguished between types of occupation. However, with the census and a few assumptions it is possible to make estimates for the categories blue collar workers, white collar workers, agricultural workers, farmers and (other) self-employed persons. The estimates have been made mostly on 2-digit level of industrial activity.

The 1930 estimates of the types of occupation by industry have been extrapolated for 1938, using the labour force estimates described in this paper.

In section 2 a few important characteristics of the 1930 occupational census are discussed. The method of typification of the persons properly belonging to the enterprise is described in sections 3.2 and 3.3 and the method of typification of the persons not properly belonging to the enterprise in section 3.4. In section 3.5 the extrapolation for 1938 is discussed.

2. The 1930 occupational census

In the 1930 Occupational Census, occupations are classified according to the kind of enterprise in which they are practised. Similar enterprises

have at different levels been combined to industrial activities.

For the industries personnel properly belonging to the enterprise is distinguished from personnel not properly belonging to the enterprise. An example of the first group is the bookbinder in the industry group bookbinderies. General and supporting occupations like administrative and warehouse personnel belong in the second group. However, if 'administration' is the main activity of the enterprise the clerical staff are considered to be personnel properly belonging to the enterprise. Insurance is an example of such an industrial activity.

For the industries I through XXIII the 1930 census indicates for the personnel properly belonging to the enterprise which position they take up in the occupation. The census distinguishes between self-employed managers, employed managers senior personnel and common workers. With regard to the unpaid family workers of self-employed persons, the husbands/wives are also considered to be self-employed persons and the children are counted as common personnel. For the industry classes XXIV through XXIX the status of the occupation is not given. For the persons not properly belonging to the enterprise the occupational status is not mentioned for any industry class. The occupational classification of the 1930 census has already been given in table 1.

3.1. General

The labour force is divided into five types of occupation: agricultural labourers, blue collar labourers, white collar labourers, farmers and (other) self-employed persons. The 1930 Occupational Census does not distinguish between these occupations, but on the basis of this Census and some assumptions it is possible to typify the labour force for the industries.

According to the Occupational Census the labour force in 1930 consisted of 3185816 persons (see table A1.1). Of them 2273880 persons (the groups 1.A up to and including 1.D in the industry classes I through XXIII) can be

directly classified according to their status. However, 471140 persons of group 1 in the classes XXIV through XXIX have not been classified in the census. The same goes for 440769 persons of group 2. This means that for 911936 persons (28.6% of the labour force) we had to determine their status.

Table A1.1. Labour force by position in the enterprise according to the 1930 Occupational Census

		Class of industry
1. Persons, properly belonging to the enterprise	2745020	
of whom:		
A. Self-employed managers	655353	I through XXIII
B. Employed managers	16584	I through XXIII
C. Senior personnel, foremen, etc.	57900	I through XXIII
D. Common workers	1544043	I through XXIII
Not typified	471140	XXIV through XXIX
2. Persons, not properly belonging to the enterprise	440796	I through XXIX
Labour force	3185816	I through XXIX

The ultimo December data of the census have been recalculated to annual averages for the use in a national accounts framework. The ultimo 1930 ratios have been applied to our estimates (annual averages) of the (dependent) labour force by industry.

3.2. Persons properly belonging to the enterprise in the industry classes I through XXIII

The 1930 Census gives the position in the enterprise of the persons of group 1 for the industry classes I through XXIII. Using this classification it is possible to split up this group according to types of occupation. Of course, the self-employed managers were classified to the category self-employed persons. The employed managers (mainly managers of limited liability companies and co-operatives) and the senior personnel have been classified to the white collar labourers. The common workers have mainly been alloted to the blue collar labourers. In some cases in the industries XX through XXIII, persons in the census group common workers have been considered to be white collar labourers.

Trade (XX) contains 93688 common workers according to the census. Of

them 20560 persons have been classified as white collar labourers. These were mainly commercial travellers. In the census the shop-assistants and similar personnel were classified as common workers. In this study they are considered as blue collar labourers. This is in accordance with the Budget Survey of 1935/36, which has also been used in compiling the interwar national accounting data.

In the census transport and communication (XXI) consists of 196659 persons. Of them 10844 persons have been classified as white collar labourers. Examples are airline pilots, telegraphers and administrative personnel.

In banking (XXII) 21550 out of 23424 common personnel according to the census are considered to be white collar labourers. They belong to the clerical staff. The same goes for the insurance business (XXIII). From the common workers (17996 persons) 16832 are seen as white collar labourers.

In the census the group common personnel in agriculture (XVIII) numbers 371315 persons. They make up the category agricultural workers. The self-employed managers are seen as farmers and senior personnel are considered as white collar labourers.

3.3. Persons properly belonging to the enterprise in the industry classes XXIV through XXIX

For the industrial activities XXIV through XXIX, the census does not indicate the position in the enterprise for persons properly belonging to the enterprise. The methods in the previous section cannot be applied. However, with detailed census data and a few assumptions it was possible to split up types of occupation.

In the enterprises n.e.c. and professions (XXIV) the common personnel consists of 112485 persons. For all 35 groups of economic activities in this class we have determined the number of self-employed persons (22068) and the number of white collar labourers (88153). The remainder (2264

persons) were typified as blue collar labourers. The government is included in XXIV. The conscripts and the unemployed relief workers are also seen as blue collar labourers.

The same procedure has been followed for education (XXV). From the 66499 persons properly belonging to the enterprise, 2649 persons are seen as self-employed persons while the others (63850 persons) are typified as white collar labourers.

The people in the household services (XXVI) are wholly seen as blue collar labourers (242955). The same holds for the 32845 casual labourers (XXVII).

In the religious organizations (XXVIII) the 9450 persons properly belonging to the enterprise are seen as white collar labourers.

The small class occupation unknown (XXIX) consists of 322 persons. They are supposed to be blue collar labourers.

3.4. Persons not properly belonging to the enterprise

Table 1 presents the 10 subgroups which are distinguished in group 2 of the census classification. Except for the classes XXVII (casual labourers) and XXIX (occupation unknown) group 2 is represented in every industry. However, not always all subgroups are distinguished. For instance, subgroup 2a (administrative personnel) will not be found in the classes XXII and XXIII and in the industries of XXI and XXIV. Those are classes where administrative activities are not seen as a support of the production process but are the main activities of the enterprises.

The subgroup 2a has been considered as white collar labourers in all industries. All other subgroups are seen as blue collar labourers.

3.5. The estimates for 1938

The 1930 data (see table A3.8) have been extrapolated for 1938. The estimates of the labour force in 1938 were the basis for the calculations. These estimates show the dependent labour force and the self-employed persons by industry. For agriculture and fishing the self-employed persons have been split up into farmers and other self-employed persons on the basis of 1930 ratios. These ratios have also been used in splitting up between blue collar, white collar and agricultural workers. The data on conscripts and people in unemployment relief works have been treated separately since independent information was available.

Appendix II. Relation between the Industrial Classification of the Interwar Occupational Censuses and the Dutch Standard Industrial Classification (SBI 1974) and the United Nations' International Standard Industrial Classification of all Economic Activities (ISIC)

Table A2.1. Relation between the SBI 1974, the interwar occupational censuses and ISIC rev 2

SBI 1974	Occupational Census 1920, 1930	ISIC Rev 2
0 Agriculture and fishing	XVIII, XIX	1 Agriculture, hunting, forestry, fishing
1 Mining and quarrying	X	2 Mining and quarrying
2/3 Manufacturing		3 Manufacturing
of which:		
20/21 Food, beverages and tobacco industry	XVII	31 Manufacture of food, beverages, tobacco
22 Textile industry	XV	321 Manufacture of textiles
23 Wearing apparel industry	VII part	322 Manufacture of wearing apparel
24 Leather and footwear industry	IX	323/324 Manufacture of leather and footwear
25 Wood and furniture industry	VI	33 Manufacture of wood and wood products
26 Paper and paper products industry	XIV	341 Manufacture of paper and paper products
27 Printing and publishing industry	III	342 Printing, publishing
28/31 Petroleum and chemical industry	V	35 Manufacture of chemicals and products
32 Building materials industry	I	36 Manufacture of non-metallic mineral product
33/37 Metal industry	XI-XIII	37/384 Basic metal industries and manufacture of metal products, machinery and equipment
38/39 Industrial manufacturing n.e.c.	II	385, 39 Other manufacturing industries
4 Utilities	XVI	4 Electricity, gas, water (utilities)
5 Construction	IV, XXVII part, XXIX part	5 Construction
6 Trade, hotels, cafes, restaurants, repair of consumer goods	XX	6, 951 Wholesale and retail trade, restaurants and hotels, repair services
7 Transport, storage and communication	XXI, XXVII part, XXIX part	7 Transport, storage, communication
81/82 Banking and insurance	XXII	81/82 Financial institutions and insurance
83/99 Business services n.e.c. except	VII part, VIII, XXIV part, XXVI, XXVIII	83/99 Services except government and repair services
90,92 General government	XXV, XXIV part	91/931 Public administration, education services

Statistical Annex

Table A3.1. Population and (dependent) labour force (annual averages)

	(1) Population	(2) Labour force	(3) Dependent labour force	(4) Population growth rate	(5) (2)/(1)	(6) (3)/(2)
	x1000			%		
1920	6848	2713	2178	0.6	39.6	80.3
1921	6921	2743	2198	1.1	39.7	80.1
1922	7032	2790	2231	1.6	39.7	80.0
1923	7150	2837	2265	1.7	39.7	79.8
1924	7264	2885	2299	1.6	39.8	79.7
1925	7366	2931	2330	1.4	39.8	79.5
1926	7471	2977	2363	1.4	39.9	79.4
1927	7576	3023	2394	1.4	39.9	79.2
1928	7678	3067	2425	1.3	40.0	79.1
1929	7781	3112	2456	1.3	40.0	78.9
1930	7884	3157	2486	1.3	40.1	78.8
1931	7999	3205	2520	1.5	40.1	78.6
1932	8122	3255	2558	1.5	40.1	78.6
1933	8237	3302	2593	1.4	40.1	78.5
1934	8341	3346	2624	1.3	40.1	78.4
1935	8433	3384	2652	1.1	40.1	78.4
1936	8516	3418	2677	1.0	40.1	78.3
1937	8598	3453	2702	1.0	40.2	78.2
1938	8684	3488	2730	1.0	40.2	78.3
1939	8781	3528	2785	1.1	40.2	78.9

Table A3.2. Total labour force and total unemployment

	(1) Total labour force	(2) Total un-employment	(3) (2)/(1)
	x1000 man-years		%
1920	2713	103	3,8
1921	2743	157	5,7
1922	2790	192	6,9
1923	2837	202	7,1
1924	2885	176	6,1
1925	2931	170	5,8
1926	2977	149	5,0
1927	3023	159	5,2
1928	3067	138	4,5
1929	3112	177	5,7
1930	3157	173	5,5
1931	3205	312	9,7
1932	3255	563	17.3
1933	3302	622	18.8
1934	3346	584	17,5
1935	3384	658	19,4
1936	3418	648	19,0
1937	3453	556	16,1
1938	3488	515	14.8
1939	3528	393	11,1

Table A3.3. Self-employed and unemployed in poor relief

	(1) Self-employed	(2) Unemployed in poor relief	(3) (2)/(1)
	x1000 man-years		%
1920	535	31,2	5,8
1921	545	31,2	5,7
1922	559	31,2	5,6
1923	573	31,2	5,4
1924	587	33,2	5,7
1925	600	32,1	5,3
1926	614	28,4	4,6
1927	628	31,7	5,0
1928	642	29,2	4,5
1929	657	43,5	6,6
1930	671	39,9	5,9
1931	684	45,3	6,6
1932	697	52,8	7,6
1933	710	54,4	7,7
1934	721	53,5	7,4
1935	732	57,3	7,8
1936	741	46,7	6,3
1937	751	44,6	5,9
1938	758	47,8	6,3
1939	744	42,7	5,7

Table A3.4. Dependent labour force by industry

SBI		1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
		x 1000																			
0	Agriculture and fishing	423	419	417	415	412	409	406	402	398	394	390	391	396	401	406	410	413	416	417	407
1	Mining and quarrying	45	45	46	46	46	46	47	47	48	48	49	50	47	45	45	43	43	43	44	42
2/3	Manufacturing	603	610	621	632	643	653	664	674	684	695	705	717	723	736	753	773	790	806	807	789
	of which:																				
20/21	Food, beverages, tobacco industry	137	140	143	146	149	152	155	157	160	163	166	168	172	175	173	177	178	182	182	175
22	Textile industry	65	67	68	69	71	72	74	75	76	78	79	80	80	85	88	95	99	101	99	98
23	Wearing apparel industry	75	75	74	74	74	73	73	72	71	71	70	70	72	75	76	77	82	84	86	90
24	Leather and footwear industry	13	13	14	14	14	15	15	15	16	16	16	17	17	19	20	22	24	27	27	25
25	Wood and furniture industry	44	45	45	46	46	47	47	48	48	48	49	49	50	53	51	53	53	53	51	47
26	Paper, paper products industry	11	11	12	12	13	13	14	14	14	15	15	16	17	18	17	18	19	20	19	19
27	Printing and publishing industry	33	33	34	35	35	36	37	38	38	39	39	40	43	44	42	43	43	43	41	40
28/31	Petroleum and chemical industry	18	19	20	21	22	23	24	26	28	30	32	34	37	37	36	36	37	37	37	35
32	Building materials industry	37	37	38	38	39	39	40	40	41	41	41	42	41	40	41	41	48	46	43	41
33/37	Metal industry	150	153	157	160	164	167	171	174	178	181	184	188	178	179	193	195	193	202	211	210
38/39	Industrial manufacturing n.e.c.	18	18	17	17	16	16	15	15	15	14	14	13	14	14	15	16	14	12	12	11
4	Utilities	22	22	22	22	22	23	23	23	23	23	23	24	23	23	22	22	22	22	22	23
5	Construction	147	152	158	163	170	177	183	190	195	200	204	204	205	208	200	201	204	204	207	198
6	Trade, hotels, cafés, restaurants, repair of consumer goods	192	198	205	213	221	229	238	246	254	263	271	278	282	287	291	294	298	301	302	296
7	Transport, storage, communication	210	212	214	216	219	220	222	224	225	227	228	230	232	235	237	238	239	240	240	234
81/82	Banking and insurance	44	44	45	45	45	45	45	46	46	46	46	46	48	49	50	51	52	53	54	53
83/99	Business services n.e.c. except	322	328	335	342	349	356	363	369	376	383	389	395	400	405	410	414	417	420	422	412
90,92	General government	169	169	169	171	171	171	172	173	175	177	181	187	201	204	211	206	200	197	214	333
Subtotal industry (SBI 1-5)		817	829	847	863	882	899	916	934	950	966	981	994	998	1012	1021	1039	1059	1075	1080	1052
Subtotal services		938	951	968	988	1005	1022	1040	1057	1076	1095	1115	1136	1164	1180	1198	1203	1205	1211	1233	1326
Total		2178	2198	2231	2265	2299	2330	2363	2394	2425	2456	2486	2520	2558	2593	2624	2652	2677	2702	2730	2785

Table A3.5. Employment of wage labourers by industry (man-years)

		1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
		x 1000																			
0	Agriculture and fishing	400	377	369	377	381	375	386	378	372	348	357	320	267	255	295	289	305	313	317	322
1	Mining and quarrying	45	44	44	44	45	45	46	47	47	47	48	48	42	38	36	33	36	40	41	40
2/3	Manufacturing	578	563	555	553	584	604	617	632	652	664	658	617	522	525	541	528	548	616	638	680
	of which:																				
20/21	Food, beverages, tobacco industry	129	129	129	135	139	143	146	149	153	157	159	158	146	144	145	143	144	148	150	153
22	Textile industry	63	62	66	66	69	69	71	74	75	76	74	70	57	59	62	63	70	80	78	88
23	Wearing apparel industry	74	72	71	66	65	65	64	65	65	65	65	63	59	60	60	60	63	68	71	81
24	Leather and footwear industry	13	13	11	12	14	14	14	15	15	16	16	15	14	15	15	17	17	18	18	20
25	Wood and furniture industry	43	41	40	39	41	43	44	44	45	46	45	40	30	31	30	28	28	32	33	34
26	Paper and paper products industry	11	11	11	11	11	12	13	13	14	14	15	15	14	14	14	14	15	17	16	17
27	Printing and publishing industry	32	32	31	31	32	33	34	35	36	37	38	38	36	35	35	35	35	36	36	35
28/31	Petroleum and chemical industry	17	17	18	18	20	21	23	24	26	28	30	29	27	26	26	24	25	28	28	30
32	Building materials industry	36	34	33	33	35	37	37	38	38	38	38	35	25	26	27	24	22	25	28	29
33/37	Metal industry	148	144	134	129	144	153	158	163	170	175	170	148	109	108	118	112	122	155	173	184
38/39	Industrial manufacturing n.e.c.	13	9	11	13	14	14	14	13	13	12	8	7	6	6	8	8	8	9	8	9
4	Utilities	22	22	22	22	22	23	23	23	23	23	23	24	23	23	22	22	22	22	22	23
5	Construction	137	141	140	138	146	152	161	163	174	173	181	167	124	126	127	115	108	123	140	152
6	Trade, hotels, cafes, restaurants, repair of consumer goods	189	194	199	204	212	219	226	234	244	254	261	262	254	252	257	258	258	265	270	268
7	Transport, storage, communication	200	193	197	204	207	209	211	211	214	212	214	196	183	170	165	157	152	162	164	168
81/82	Banking and insurance	44	44	44	43	43	43	43	43	44	44	44	44	43	44	45	46	46	48	49	49
83/99	Business services n.e.c. except	322	326	332	337	344	351	357	363	371	379	385	389	388	389	395	398	400	405	408	400
90,92	General government	169	169	169	171	171	171	172	173	175	177	181	187	201	204	211	206	200	197	214	333
Subtotal industry (SBI 1-5)		782	769	761	758	797	824	847	865	896	908	911	855	711	711	727	699	714	801	841	895
Subtotal services		924	926	941	959	977	993	1009	1024	1048	1066	1085	1078	1070	1059	1072	1064	1057	1076	1105	1218
Total		2106	2073	2070	2094	2156	2192	2242	2267	2316	2322	2353	2253	2048	2025	2094	2052	2076	2190	2263	2435

Table A3.6. Employment among wage labourers by industry, annual changes

	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
	%																		
0 Agriculture and fishing	-5.8	-2.3	2.1	1.1	-1.5	2.9	-1.9	-1.6	-6.4	2.4	-10.2	-16.8	-4.3	15.7	-2.1	5.6	2.7	1.2	1.6
1 Mining and quarrying	-2.3	0.5	1.5	1.1	1.0	1.9	0.9	1.0	0.2	2.0	-1.1	-12.0	-9.4	-4.1	-8.1	6.7	11.2	3.1	-2.3
2/3 Manufacturing	-2.7	-1.4	-0.3	5.6	3.4	2.2	2.4	3.1	2.0	-0.9	-6.3	-15.3	0.4	3.1	-2.3	3.9	12.4	3.6	6.6
of which:																			
20/21 Food, beverages and tobacco industry	0.3	0.4	4.0	3.4	2.5	2.5	2.1	2.8	2.6	1.2	-0.9	-7.7	-1.0	0.2	-1.5	0.7	3.1	1.1	2.2
22 Textile industry	-2.4	6.6	0.3	3.7	1.2	2.0	4.2	2.0	1.4	-2.4	-6.3	-18.0	3.5	5.3	1.0	10.8	15.3	-3.2	12.8
23 Wearing apparel industry	-2.9	-1.5	-6.6	-1.9	-0.1	-1.3	1.7	-0.5	0.1	0.4	-2.5	-6.2	0.5	0.4	0.5	4.8	7.3	4.9	13.6
24 Leather and footwear industry	-1.1	-11.1	8.1	13.9	0.0	3.8	2.9	4.3	2.5	1.3	-4.8	-5.7	7.1	-0.5	9.6	0.7	5.0	1.1	14.8
25 Wood and furniture industry	-4.4	-2.2	-1.4	4.5	3.5	2.4	0.3	3.1	1.7	-2.3	-11.5	-24.0	1.7	-0.5	-6.6	0.0	13.0	2.6	4.5
26 Paper and paper products industry	-0.4	-0.6	-1.0	5.7	6.1	4.4	4.3	4.6	4.6	3.5	-0.6	-7.5	2.0	1.8	0.5	5.6	10.8	-2.9	6.3
27 Printing and publishing industry	-1.8	-2.0	-2.4	4.2	4.6	2.9	2.8	3.2	3.1	2.0	-1.0	-5.2	-2.6	-0.4	-0.6	0.1	4.7	-1.6	-1.1
28/31 Petroleum and chemical industry	0.9	1.2	3.6	9.2	6.4	6.9	6.8	8.4	6.9	5.7	-2.1	-8.2	-1.8	-1.5	-5.7	3.2	10.7	2.1	5.0
32 Building materials industry	-5.4	-2.2	0.3	5.8	5.8	0.8	1.1	1.1	-1.2	1.3	-9.2	-27.7	3.3	5.8	-11.0	-7.9	12.3	10.7	4.4
33/37 Metal industry	-2.8	-6.7	-3.7	11.6	6.2	3.2	2.9	4.7	2.4	-2.8	-12.7	-26.6	-0.3	9.3	-5.4	8.7	27.6	11.3	6.5
38/39 Industrial manufacturing n.e.c.	28.2	17.0	23.0	10.7	-0.7	-4.4	-5.6	3.4	-6.3	-32.6	-20.6	-15.6	11.1	21.7	2.7	2.7	14.3	-11.4	6.4
4 Utilities	0.3	0.8	0.8	0.8	0.6	0.6	0.5	0.4	0.4	0.3	1.8	-3.2	-0.8	-0.5	-1.0	-2.5	-0.8	2.4	2.9
5 Construction	2.4	-0.2	-1.5	5.5	3.9	6.1	1.3	7.0	-0.7	4.6	-7.7	-25.6	1.1	1.0	-9.6	-5.7	13.8	13.5	8.6
6 Trade, hotels, cafes, restaurants, repair of consumer goods	2.4	2.6	2.5	3.8	3.5	2.9	3.6	4.5	4.0	3.0	0.3	-2.9	-1.1	2.0	0.4	0.3	2.7	1.7	-0.5
7 Transport, storage and communication	-3.3	1.9	3.4	1.8	0.8	0.9	0.2	1.3	-0.9	1.1	-8.6	-6.7	-6.9	-3.0	-4.9	-3.1	6.4	1.6	1.9
81/82 Banking and insurance	-0.5	-0.8	-1.1	0.4	0.3	-0.3	0.4	1.3	1.0	-0.2	-0.1	-1.8	0.2	3.3	1.7	1.4	3.2	2.6	0.2
83/99 Business services n.e.c. except	1.4	1.7	1.6	2.0	1.9	1.7	1.9	2.1	2.0	1.6	1.0	-0.2	0.4	1.4	0.7	0.5	1.2	0.8	-1.9
90,92 General government	0.1	-0.1	1.3	-0.1	0.0	0.8	0.1	1.3	1.4	1.9	3.4	7.6	1.6	3.1	-2.1	-3.0	-1.6	8.8	55.3
Subtotal industry (SBI 1-5)	-1.7	-1.0	-0.4	5.2	3.3	2.8	2.1	3.6	1.3	0.3	-6.1	-16.8	-0.1	2.2	-3.9	2.2	12.1	5.1	6.4
Subtotal services	0.3	1.5	2.0	1.9	1.6	1.6	1.5	2.3	1.7	1.8	-0.7	-0.8	-1.0	1.2	-0.7	-0.7	1.9	2.7	10.2
Total	-1.6	-0.1	1.1	2.9	1.7	2.3	1.1	2.2	0.3	1.3	-4.2	-9.1	-1.1	3.4	-2.0	1.2	5.5	3.3	7.6

Table A3.7. Unemployment among wage labourers by industry in which they were formerly employed, as a percentage of the dependent labour force

	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
0 Agriculture and fishing	5.4	9.9	11.5	9.1	7.6	8.3	4.9	5.9	6.6	11.7	8.5	18.0	32.7	36.4	27.3	29.4	26.1	24.6	24.0	20.7
1 Mining and quarrying	2.0	4.0	3.8	2.9	2.6	2.4	1.4	1.5	1.6	2.6	1.9	4.0	11.0	15.7	19.0	22.7	16.1	8.1	6.6	5.5
2/3 Manufacturing	4.1	7.7	10.7	2.5	9.1	7.5	7.0	6.2	4.8	4.4	6.6	14.0	27.7	28.7	28.2	31.7	30.6	23.6	20.9	13.8
of which:																				
20/21 Food, beverages, tobacco industry	6.5	7.7	9.3	7.6	6.5	5.9	5.4	5.2	4.3	3.4	3.8	5.8	15.0	17.3	16.5	19.4	19.4	18.6	17.7	12.6
22 Textile industry	3.2	7.0	3.1	4.9	3.4	4.1	4.0	1.8	1.5	1.8	5.7	12.8	29.0	30.0	29.5	33.5	29.5	20.4	21.0	10.3
23 Wearing apparel industry	1.9	3.9	4.9	0.7	11.9	1.4	1.9	9.7	9.3	8.4	7.0	10.0	17.8	20.0	20.8	22.1	22.7	19.0	17.2	10.5
24 Leather and footwear industry	2.6	5.7	18.3	3.9	4.4	6.6	5.3	4.7	2.7	2.4	3.1	9.5	17.1	18.4	24.3	24.2	30.9	33.8	34.6	16.8
25 Wood and furniture industry	3.7	8.6	11.7	3.9	11.2	9.0	7.7	8.3	6.3	5.4	8.2	19.6	40.0	42.1	40.4	45.9	46.7	39.1	35.2	26.3
26 Paper and paper products industry	0.8	4.2	8.1	2.2	10.4	8.0	7.1	6.2	4.8	3.4	3.0	5.7	17.4	20.6	18.0	19.7	20.0	16.4	13.8	10.8
27 Printing and publishing industry	0.8	4.2	8.1	2.2	10.4	8.0	7.1	6.2	4.8	3.4	3.0	5.7	17.4	20.6	18.0	19.7	20.0	16.4	13.8	10.8
28/31 Petroleum and chemical industry	4.0	7.1	10.4	1.7	8.5	7.7	6.9	6.3	4.7	4.8	6.5	13.3	28.2	29.2	28.6	32.3	31.5	24.7	22.4	13.8
32 Building materials industry	3.3	9.3	12.7	3.6	9.9	5.9	6.3	6.3	6.2	8.3	7.9	17.0	39.8	35.1	33.7	41.4	53.5	45.1	35.6	28.7
33/37 Metal industry	1.5	6.0	14.3	9.3	11.9	8.4	7.4	6.5	4.0	3.4	7.7	21.4	39.0	39.4	38.6	42.6	37.0	23.2	18.2	12.1
38/39 Industrial manufacturing n.e.c.	30.7	48.7	38.4	2.2	11.7	9.9	1.5	4.2	8.7	12.1	9.0	50.3	60.1	54.0	49.7	52.3	43.4	25.2	30.6	21.8
4 Utilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 Construction	6.3	7.2	11.3	5.1	14.3	4.4	2.1	4.2	0.6	13.4	1.2	17.9	39.4	39.6	36.6	42.9	47.0	39.6	32.5	23.2
6 Trade, hotels, cafes, restaurants, repair of consumer goods	1.2	2.0	3.2	4.4	4.4	4.5	5.0	5.0	4.0	3.4	3.6	5.7	9.9	12.3	11.8	12.5	13.2	11.7	10.8	9.2
7 Transport, storage, communication	5.1	8.7	7.9	5.8	5.2	5.2	5.2	5.7	5.1	6.5	6.0	14.7	21.3	27.5	30.2	34.1	36.4	32.7	31.6	28.3
81/82 Banking and insurance	0.8	1.3	2.6	4.2	4.3	4.4	5.0	4.9	3.9	3.1	3.3	4.6	8.6	10.5	9.6	9.9	10.4	9.3	8.3	6.9
83/99 Business services n.e.c. except	0.2	0.4	0.8	1.3	1.3	1.4	1.6	1.6	1.3	1.0	1.2	1.6	3.1	3.9	3.6	3.8	4.1	3.7	3.4	2.9
90,92 General government	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal industry (SBI 1-5)	4.3	7.2	10.1	2.1	9.6	8.4	7.6	7.5	5.7	6.0	7.2	13.9	28.7	29.7	28.8	32.8	32.6	25.5	22.1	14.9
Subtotal services	1.5	2.5	2.8	2.9	2.7	2.8	3.1	3.1	2.6	2.7	2.6	5.1	8.1	10.2	10.5	11.5	12.3	11.1	10.4	8.2
Total	3.3	5.7	7.2	7.5	6.2	5.9	5.1	5.3	4.5	5.4	5.4	10.6	19.9	21.9	20.2	22.6	22.5	18.9	17.1	12.6

Table A3.8. Labour force by occupation and by industry, 1930

SBI		Agricultural labourers	Farmers	Blue collar labourers	White collar labourers	Self-employed persons	Total
0	Agriculture and fishing	372112	258693	13563	4567	4240	653175
1	Mining and quarrying			46693	2370	624	49687
2/3	Manufacturing			640419	64781	76360	781560
	of which:						
20/21	Food, beverages and tobacco industry			148138	17524	22280	187941
22	Textile industry			73603	5369	1442	80415
23	Wearing apparel industry			67159	2756	19983	89898
24	Leather and footwear industry			15230	1170	1231	17630
25	Wood and furniture industry			45669	3067	10208	58945
26	Paper and paper products industry			14152	1164	210	15527
27	Printing and publishing industry			32049	7361	2579	41989
28/31	Petroleum and chemical industry			26922	4863	614	32399
32	Building materials industry			38567	2742	1437	42746
33/37	Metal industry			166174	17780	14790	198744
38/39	Industrial manufacturing n.e.c.			12756	985	1584	15325
4	Utilities			17549	5580	23	23153
5	Construction			196881	6963	40294	244138
6	Trade, hotels, cafés, restaurants, repair of consumer goods			191709	79401	219948	491058
7	Transport, storage and communication			186829	41149	26982	254960
81/82	Banking and insurance			5608	40217	2128	47954
83/99	Business services n.e.c. except			304538	84677	41449	430664
90,92	General government			67744	112898		180641
Subtotal industry (SBI 1-5)				901542	79695	117301	1098537
Subtotal services				756427	358342	290507	1405276
Total		372112	258693	1671412	442724	412048	3156989

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National Accounts Occasional Papers

NA/01 Flexibility in the system of National Accounts, Van Eck, R., C.N. Gorter and H.K. van Tuinen (1983).
This paper sets out some of the main ideas of what gradually developed into the Dutch view on the fourth revision of the SNA. In particular it focuses on the validity and even desirability of the inclusion of a number of carefully chosen alternative definitions in the "Blue Book", and the organization of a flexible system starting from a core that is easier to understand than the 1968 SNA.

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

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

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

NA/05 The use of chain indices for deflating the National Accounts, Al, P.G., B.M. Balk, S. de Boer and G.P. den Bakker (1985).
This paper is devoted to the problem of deflating National Accounts and input-output tables. This problem is approached from the theoretical as well as from the practical side. Although the theoretical argument favors the use of chained Vartia-I indices, the current practice of compilating National Accounts restricts to using chained Paasche and Laspeyres indices. Various possible objections to the use of chained indices are discussed and rejected.

NA/06 Revision of the system of National Accounts: the case for flexibility, Van Bochove, C.A. and H.K. van Tuinen (1985).
It is argued that the structure of the SNA should be made more flexible. This can be achieved by means of a system of a general purpose core supplemented with special modules. This core is a fully fledged, detailed system of National Accounts with a greater institutional content than the present SNA and a more elaborate description of the economy at the meso-level. The modules are more analytic and reflect special purposes and specific theoretical views.

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

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

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

NA/10 Dual sectoring in National Accounts, Al, P.G. (1985).
Following a conceptual explanation of dual sectoring, an outline is given of a statistical system with complete dual sectoring in which the linkages are also defined and worked out. It is shown that the SNA 1968 is incomplete and obscure with respect to the links between the two sub-processes.

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

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

NA/13 The simultaneous compilation of current price and deflated input-output tables, De Boer, S. and G.A.A.M. Broesterhuizen (1986).
A few years ago the method of compiling input-output tables underwent in the Netherlands an essential revision. The most significant improvement is that during the entire statistical process, from the processing and analysis of the basic data up to and including the phase of balancing the tables, data in current prices and deflated data are obtained simultaneously and in consistency with each other.

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

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

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

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

NA/18 The Dutch economy, 1921-1939 and 1969-1985. A comparison based on revised macro-economic data for the interwar period, Den Bakker, G.P., T.A. Huitker and C.A. van Bochove (1987).
A set of macro-economic time series for the Netherlands 1921-1939 is presented. The new series differ considerably from the data that had been published before. They are also more comprehensive, more detailed, and conceptually consistent with the modern National Accounts. The macro-economic developments that are shown by the new series are discussed. It turns out that the traditional economic-historical view of the Dutch economy has to be reversed.

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

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

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

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

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

NA/24 **On the adjustment of tables with Lagrange multipliers**, Harthoorn, R. and J. van Dalen (1987).
An efficient variant of the Lagrange method is given, which uses no more computer time and central memory then the widely used RAS method. Also some special cases are discussed: the adjustment of row sums and column sums, additional restraints, mutual connections between tables and three dimensional tables.

NA/25 **The methodology of the Dutch system of quarterly accounts**, Janssen, R.J.A. and S.B. Algera (1988).
In this paper a description is given of the Dutch system of quarterly national accounts. The backbone of the method is the compilation of a quarterly input-output table by integrating short-term economic statistics.

NA/26 **Imputations and re-routeings in the National Accounts**, Gorter, Cor N. (1988).
Starting out from a definition of 'actual' transactions an inventory of all imputations and re-routeings in the SNA is made. It is discussed which of those should be retained in the core of a flexible system of National Accounts. Conceptual and practical questions of presentation are brought up. Numerical examples are given.

NA/27 **Registration of trade in services and market valuation of imports and exports in the National Accounts**, Bos, Frits (1988).
The registration of external trade transactions in the main tables of the National Accounts should be based on invoice value; this is not only conceptually very attractive, but also suitable for data collection purposes.

NA/28 **The institutional sector classification**, Van den Bos, C. (1988).
A background paper on the conceptual side of the grouping of financing units. A limited number of criteria are formulated.

NA/29 **The concept of (transactor-)units in the National Accounts and in the basic system of economic statistics**, Bloem, Adriaan M. (1989).
Units in legal-administrative reality are often not suitable as statistical units in describing economic processes. Some transformation of legal-administrative units into economic statistical units is needed. This paper examines this transformation and furnishes definitions of economic statistical units. Proper definitions are especially important because of the forthcoming revision of the SNA.

NA/30 **Regional income concepts**, Bloem, Adriaan M. and Bas De Vet (1989).
In this paper, the conceptual and statistical problems involved in the regionalization of national accounting variables are discussed. Examples are the regionalization of Gross Domestic Product, Gross National Income, Disposable National Income and Total Income of the Population.

NA/31 The use of tendency surveys in extrapolating National Accounts, Oudde-ken, Frank and Gerrit Zijlmans (1989).
This paper discusses the feasibility of the use of tendency survey data in the compilation of very timely Quarterly Accounts. Some preliminary estimates of relations between tendency survey data and regular Quarterly Accounts-indicators are also presented.

NA/32 An economic core system and the socio-economic accounts module for the Netherlands, Gorter, Cor N. and Paul van der Laan (1989).
A discussion of the core and various types of modules in an overall system of economy related statistics. Special attention is paid to the Dutch Socio-economic Accounts. Tables and figures for the Netherlands are added.

NA/33 A systems view on concepts of income in the National Accounts, Bos, Frits (1989).
In this paper, concepts of income are explicitly linked to the purposes of use and to actual circumstances. Main choices in defining income are presented in a general system. The National Accounts is a multi-purpose framework. It should therefore contain several concepts of income, e.g. differing with respect to the production boundary. Furthermore, concepts of national income do not necessarily constitute an aggregation of income at a micro-level.

NA/34 How to treat borrowing and leasing in the next SNA, Keuning, Steven J. (1990).
The use of services related to borrowing money, leasing capital goods, and renting land should not be considered as intermediate inputs into specific production processes. It is argued that the way of recording the use of financial services in the present SNA should remain largely intact.

NA/35 A summary description of sources and methods used in compiling the final estimates of Dutch National Income 1986, Gorter, Cor N. and others (1990).
Translation of the inventory report submitted to the GNP Management Committee of the European Communities.

NA/36 The registration of processing in supply and use tables and input-output tables, Bloem, Adriaan M., Sake De Boer and Pieter Wind (1993).
The registration of processing is discussed primarily with regard to its effects on input-output-type tables and input-output quotes. Links between National Accounts and basic statistics, user demands and international guidelines are examined. Net recording is in general to be preferred. An exception has to be made when processing amounts to a complete production process, e.g. oil refineries in the Netherlands.

NA/37 A proposal for a SAM which fits into the next System of National Accounts, Keuning, Steven J. (1990).
This paper shows that all flow accounts which may become part of the next System of National Accounts can be embedded easily in a Social Accounting Matrix (SAM). In fact, for many purposes a SAM format may be preferred to the traditional T-accounts for the institutional sectors, since it allows for more flexibility in selecting relevant classifications and valuation principles.

NA/38 Net versus gross National Income, Bos, Frits (1990).
In practice, gross figures of Domestic Product, National Product and National Income are most often preferred to net figures. In this paper, this practice is challenged. Conceptual issues and the reliability of capital consumption estimates are discussed.

NA/39 Concealed interest income of households in the Netherlands; 1977, 1979 and 1981, Kazemier, Brugt (1990).
The major problem in estimating the size of hidden income is that total income, reported plus unreported, is unknown. However, this is not the case with total interest income of households in the Netherlands. This makes it possible to estimate at least the order of magnitude of this part of hidden income. In this paper it will be shown that in 1977, 1979 and 1981 almost 50% of total interest received by households was concealed.

NA/40 Who came off worst: Structural change of Dutch value added and employ-- ment during the interwar period, Den Bakker, Gert P. and Jan de Gijt (1990).
In this paper new data for the interwar period are presented. The distribution of value added over industries and a break-down of value added into components is given. Employment by industry is estimated as well. Moreover, structural changes during the interwar years and in the more recent past are juxtaposed.

NA/41 The supply of hidden labour in the Netherlands: a model, Kazemier, Brugt and Rob van Eck (1990).
This paper presents a model of the supply of hidden labour in the Netherlands. Model simulations show that the supply of hidden labour is not very sensitive to cyclical fluctuations. A tax exempt of 1500 guilders for second jobs and a higher probability of detection, however, may substantially decrease the magnitude of the hidden labour market.

NA/42 Benefits from productivity growth and the distribution of income, Keuning, Steven J. (1990).
This paper contains a discussion on the measurement of multifactor productivity and sketches a framework for analyzing the relation between productivity changes and changes in the average factor remuneration rate by industry. Subsequently, the effects on the average wage rate by labour category and the household primary income distribution are studied.

NA/43 Valuation principles in supply and use tables and in the sectoral accounts, Keuning, Steven J. (1991).
In many instances, the valuation of transactions in goods and services in the national accounts poses a problem. The main reason is that the price paid by the purchaser deviates from the price received by the producers. The paper discusses these problems and demonstrates that different valuations should be used in the supply and use tables and in the sectoral accounts.

NA/44 The choice of index number formulae and weights in the National Accounts. A sensitivity analysis based on macro-economic data for the interwar period, Bakker, Gert P. den (1991).
The sensitivity of growth estimates to variations in index number formulae and weighting procedures is discussed. The calculations concern the macro-economic variables for the interwar period in the Netherlands. It appears, that the use of different formulae and weights yields large differences in growth rates. Comparisons of Gross Domestic Product growth rates among countries are presently obscured by the use of different deflation methods. There exists an urgent need for standardization of deflation methods at the international level.

NA/45 Volume measurement of government output in the Netherlands; some alternatives, Kazemier, Brugt (1991).
This paper discusses three alternative methods for the measurement of the production volume of government. All methods yield almost similar results: the average annual increase in the last two decades of government labour productivity is about 0.7 percent per full-time worker equivalent. The implementation of either one of these methods would have led to circa 0.1 percentage points higher estimates of economic growth in the Netherlands.

NA/46 An environmental module and the complete system of national accounts, Boo, Abram J. De, Peter R. Bosch, Cor N. Gorter and Steven J. Keuning (1991).
A linkage between environmental data and the National Accounts is often limited to the production accounts. This paper argues that the consequences of economic actions on ecosystems and vice versa should be considered in terms of the complete System of National Accounts (SNA). One should begin with relating volume flows of environmental matter to the standard economic accounts. For this purpose, a so-called National Accounting Matrix including Environmental Accounts (NAMEA) is proposed. This is illustrated with an example.

NA/47 Deregulation and economic statistics: Europe 1992, Bos, Frits (1992).
The consequences of deregulation for economic statistics are discussed with a view to Europe 1992. In particular, the effects of the introduction of the Intrastat-system for statistics on international trade are investigated. It is argued that if the Statistical Offices of the EC-countries do not respond adequately, Europe 1992 will lead to a deterioration of economic statistics: they will become less reliable, less cost effective and less balanced.

NA/48 The history of national accounting, Bos, Frits (1992).
At present, the national accounts in most countries are compiled on the basis of concepts and classifications recommended in the 1968-United Nations guidelines. In this paper, we trace the historical roots of these guidelines (e.g. the work by King, Petty, Kuznets, Keynes, Leontief, Frisch, Tinbergen and Stone), compare the subsequent guidelines and discuss also alternative accounting systems like extended accounts and SAMs.

NA/49 Quality assessment of macroeconomic figures: The Dutch Quarterly Flash, Reininga, Ted, Gerrit Zijlmans and Ron Janssen (1992).
Since 1989-IV, the Dutch Central Bureau of Statistics has made preliminary estimates of quarterly macroeconomic figures at about 8 weeks after the end of the reference quarter. Since 1991-II, a preliminary or "Flash" estimate of GDP has been published. The decision to do so was based on a study comparing the Flash estimates and the regular Quarterly Accounts figures, which have a 17-week delay. This paper reports on a similar study with figures through 1991-III.

NA/50 Quality improvement of the Dutch Quarterly Flash: A Time Series Analysis of some Service Industries, Reininga, Ted and Gerrit Zijlmans (1992).
The Dutch Quarterly Flash (QF) is, just like the regular Quarterly Accounts (QA), a fully integrated statistic based on a quarterly updated input-output table. Not all short term statistics used to update the QA's IO-table are timely enough to be of use for the QF, so other sources have to be found or forecasts have to be made. In large parts of the service industry the latter is the only possibility. This paper reports on the use of econometric techniques (viz. series decomposition and ARIMA modelling) to improve the quality of the forecasts in five parts of the service industry.

NA/51 A Research and Development Module supplementing the National Accounts, Bos, Frits, Hugo Hollanders and Steven Keuning (1992).
This paper presents a national accounts framework fully tailored to a description of the role of Research and Development (R&D) in the national economy. The framework facilitates to draw macro-economic conclusions from all kinds of data on R&D (also micro-data and qualitative information). Figures presented in this way can serve as a data base for modelling the role of R&D in the national economy.

NA/52 The allocation of time in the Netherlands in the context of the SNA; a module, Kazemier, Brugt and Jeanet Exel (1992).
This paper presents a module on informal production, supplementing the National Accounts. Its purpose is to incorporate informal production into the concepts of the SNA. The relation between formal and informal production is shown in the framework of a Social Accounting Matrix (SAM). To avoid a controversial valuation of informal production, the module constists of two SAMs. One expressed in actual prices with informal labour valued zero, and one which expresses the embedded informal labour input measured in terms of hours worked.

NA/53 National Accounts and the environment: the case for a system's approach, Keuning, Steven J. (1992).
The present set of main economic indicators should be extended with one or a few indicators on the state of the environment. This paper lists various reasons why a so-called Green Domestic Product is not suitable for this purpose. Instead, a system's approach should be followed. A National Accounting Matrix including Environmental Accounts (NAMEA) is presented and the way to derive one or more separate indicators on the environment from this information system is outlined.

NA/54 How to treat multi-regional units and the extra-territorial region in the Regional Accounts?, De Vet, Bas (1992).
This paper discusses the regionalization of production and capital formation by multi-regional kind-of-activity units. It also examines the circumstances in which a unit may be said to have a local kind-of-activity unit in the extra-territorial region and what should be attributed to this "region".

NA/55 A historical Social Accounting Matrix for the Netherlands (1938), Den Bakker, Gert P., Jan de Gijt and Steven J. Keuning (1992).
This paper presents a Social Accounting Matrix (SAM) for the Netherlands in 1938, including related, non-monetary tables on demographic characteristics, employment, etc. The distribution of income and expenditure among household subgroups in the 1938 SAM is compared with concomittant data for 1987.

NA/56 Origin and development of the Dutch National Accounts, Den Bakker, Gert P. (1992).
This paper describes the history of national accounting in the Netherlands. After two early estimates in the beginning of the nineteenth century, modern national accounting started in the 1930s on behalf of the Tinbergen model for the Dutch economy. The development spurred up after World War II to provide data to the government for economic planning purposes. In the 1980s, the development was towards a flexible and institutional approach.

NA/57 Compiling Dutch Gross National Product (GNP); summary report on the final estimates after the revision in 1992, Bos, Frits (1992).
This summary report describes the sources and methods used for compiling the final estimate of Dutch Gross National Product after the revision of the Dutch National Accounts in 1992. Attention is focused on the estimation procedures for 1988. A more extensive report is also available.

NA/58 The 1987 revision of the Netherlands' National Accounts, Van den Bos, C and P.G. Al (1994).
The 1987 revision that was completed in 1992 has improved the Dutch National Accounts in three ways. First, new and other data sources have been used, like Production statistics of service industries, the Budget Survey and Statistics on fixed capital formation. Secondly, the integration process has been improved by the use of detailed make- and use-tables instead of more aggregate input-output tables. Thirdly, several changes in bookkeeping conventions have been introduced, like a net instead of a gross registration of processing to order.

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

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

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

NA/62 Revision of the 1987 Dutch agricultural accounts, Pauli, Peter and Nico van Stokrom (1994).
During the recent revision of the Dutch national accounts, new agricultural accounts have been compiled for the Netherlands. This paper presents the major methodological and practical improvements and results for 1987, the base year for this revision. In addition, this paper demonstrates that a linkage can be established between the E.C. agricultural accounting system and the agricultural part of the standard national accounts.

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

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

NA/65 Analyzing economic growth: a description of the basic data available for the Netherlands and an application, Van Leeuwen, George, Hendrie van der Hoeven and Gerrit Zijlmans (1994).
This paper describes the STAN project of the OECD and the Dutch national accounts data supplied to the STAN database, which is designed for a structural analysis of the role of technology in economic performance. Following an OECD analysis for other industrial countries, the importance of international trade for a small open economy such as the Netherlands is investigated. The STAN database is also available on floppy disk at the costs of DFL. 25, an can be ordered by returning the order form below (Please mention: STAN floppy disk).

NA/66 Comparability of the sector General Government in the National Accounts, a case study for the Netherlands and Germany, Streppel, Irene and Dick Van Tongeren (1994).
This paper questions the international comparability of data concerning the sector General Government in the National Accounts. Two differences are distinguished: differences due to lack of compliance with international guidelines and institutional differences. Adjustments to National Accounts data are reflected in a separate module which comparises Germany versus The Netherlands. The module shows that total General Government resources as well as uses are substantially higher in the Netherlands.

NA/67 What would Net Domestic Product have been in an environmentally sustainable economy?, Preliminary views and results, De Boer, Bart, Mark de Haan and Monique Voogt (1994).
Sustainable use of the environment is a pattern of use that can last forever, at least in theory. This pattern is likely to render a lower net domestic product than the present economy. The coherence between reductions in pressure on the environment and changes in net domestic product is investigated with the help of a simple multiplier model. This model is based on a National Accounting Matrix including Environmental Accounts (NAMEA).

NA/68 A Social Accounting Matrix for the Netherlands, conceptual issues and results, (forthcoming) Timmerman, Jolanda (1994).
In this paper a Social Accounting Matrix (SAM) for the Netherlands is presented. Two years are covered: 1988 and 1990. The SAMs integrate statistics on the distribution of income, and consumption expenditure among various household groups in a national accounts framework. Simultaniously, labour income and employment are disaggregated into several labour categories.

NA/69 Analyzing relative factor inputs of Dutch exports: An application of the 1990 Social Accounting Matrix for the Netherlands (forthcoming), Reininga, Ted (1994).
In this paper the validity of neoclassical trade theory for explaining Dutch international trade patterns is studied. The analysis is carried out with the use of a Social Accounting Matrix for The Netherlands. This study corroborates the outcome of other recent analysis in this field: classical trade theory offers a better starting-point to understand Dutch trade patterns than neoclassical trade theory. Moreover, these recent studies point to the increasing relevance of insights derived from modern trade theory. The results presented here seem to support this point of view.

NA/70 SESAME for the evaluation of economic development and social change, Keuning, Steven J. (1994).
This paper elaborates on the concept of a System of Economic and Social Accounting Matrices and Extensions, or SESAME for short. The SESAME-concept serves to meet the criticism that conventional national accounts take a too limited view at social, environmental and economic development. SESAME details the monetary accounts and couples non-monetary information in an integral system approach. SESAME is meant as a synthesis of national accounts and the social indicators approach.

NA/71 New revision policies for the Dutch National Accounts, Den Bakker, Gert P., Jan de Gijt and Robert A.M. van Rooijen (1994).
This paper presents the (new) revision policy for the Dutch National Accounts. In the past, several major revisions of national accounting data have been carried out in the Netherlands. In the course of time, the policy has changed several times. Recently, the aim has become to publish relatively long time-series shortly after the publication of the revised benchmark year data.

NA/72 Labour force data in a National Accounting framework, Den Bakker, Gert P. and Jan de Gijt (1994).
This paper deals with the Dutch interwar labour force data. Starting with census data the estimation of the working and non-working labour force by industry and by occupational type is described and the results are discussed. The data have been estimated within the national accounts framework. It is the first time that labour market figures at a meso-level have been estimated which are linked to other national accounting figures.

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