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THE DUTCH ECONOMY 1921-39: REVISED MACROECONOMIC DATA FOR THE INTERWAR PERIOD

BY GERT P. DEN BAKKER AND THEO A. HUITKER

National Accounts Research Division, Central Bureau of Statistics, the Netherlands

AND

CORNELIS A. VAN BOCHOVE

Department of Statistics on Employment and Wages, Central Bureau of Statistics, the Netherlands

A set of revised macroeconomic time series for the Netherlands 1921-39 is presented. The series cover the "Consolidated Accounts for the Nation" of the SNA in current prices as well as the national product account and some additional series in prices for the previous year. The new interwar series differ considerably from the data that has been published before. They are also more comprehensive, more detailed, and conceptually consistent with the modern national accounts.

1. INTRODUCTION

1.1. *Purpose of the Revision*

In the past few years considerable attention has been focused on the 1930s. This attention appears to have been induced by recent economic experiences. At the end of the 1970s, a depression began that turned out to be far less tractable than the optimistic Keynesian economists of the fifties and sixties would have thought possible. This experience has lead to a more understanding view of the policies of the thirties and, at the same time, to a greater demand for reliable information on the period, which might shed new light on the current economic problems.

So far, a comparison of macroeconomic developments in the thirties with those in the recent past was hampered by the lack of adequate data for the former period. Published national accounting data for the twenties and thirties (to be described in the second part of this section) are inadequate for purposes of comparison: there are too many conceptual differences with the data for the recent past; there are considerable differences in statistical methodology; and the pre-war data are incomplete and insufficiently detailed. For these reasons, a revision of the historical series for 1921-39 has been carried out at the Netherlands Central Bureau of Statistics, in order to obtain data that are consistent with those for the period from 1969 onwards. A summary description of this revision is

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provided in section 1.2 and a more detailed one in section 2. First, however, we shall provide a more detailed survey of the data published until now.

The CBS regularly publishes long historical series in both the annual national accounts publication and in the five-yearly publications "X-years of statistics in time series." These publications provide data, from 1900 onward, on the national income, both at factor cost and at market prices. For the latter variable, price and volume data are also provided. From 1921 onward, current-price data are given for: net domestic product, imports and exports of goods, private consumption, net private investment and changes in stocks; and net government expenditure, the latter without a breakdown into consumption and investment. Finally, net exports of services are shown.

These published data were, in part, compiled in the 1950s in a joint research project of the Central Planning Bureau (CPB) and the CBS, financed by "ZWO," the Dutch acronym for "Zuiver Wetenschapelijk Onderzoek" (Pure Scientific Research). We shall refer to these series as "ZWO series." A considerable number of series were compiled for 1921-38. Part of these have been used in the construction of the econometric models of the CPB until the mid-seventies. Informally, the CPB also provided a part of the series to academic researchers, but no proper publication of all the series compiled and of the methods employed has been put into print.

The ZWO material consists of series for both macroeconomic variables and breakdowns of the variables. In addition to the series published by the CBS, the macroeconomic variables are: government wages; non-government wages; enterprises' operating surplus; consumption of fixed capital by enterprises; changes in stocks. The detailed series, which never left the archives of the CPB and the CBS, provide breakdowns of the aggregates, such as investments, by type of asset. For mose variables, price and volume series were compiled in addition to the current price series. Both the published series and the unpublished ZWO series are afflicted with a number of shortcomings. Firstly, the series are *incomplete* in the sense that, e.g. the "Consolidated Accounts for the Nation" of the SNA cannot be completely extracted from them. Thus, government consumption and investment were not compiled separately, no consumption of fixed capital by government was calculated, imports and exports of services are not specified separately, no current account with the rest of the world can be compiled because a number of capital transfers have been combined with the net income transfers to the rest of the world. All this is true for the unpublished series. The published series are even more incomplete, cf. the inventory provided above. Thus, from the published data it is not even possible to compile a *gross* domestic product.

A second shortcoming of the available series is that they are *conceptually* inconsistent with the series for recent years. To provide some examples:

—no distinction is made between domestic and national private consumption;

—the concept of consumption of fixed capital employed implicitly in the series is the one underlying depreciation data in enterprise accounts. For 1921-38 this mainly amounts to valuation at historical instead of current prices;

—price and volume series were compiled employing Fisher indices instead of the Paasche-Laspeyres pair currently in use.

A third drawback of the series is that values of the variables are, to some extent, incomparable with the values for recent years because of *differences in statistical methodology*. A major example of such a difference is the method of calculation of national income. Since the Second World War, the CBS employs the commodity-flow method, an elaborated version of the net production method. For the 1921-39 period, national income was estimated separately by means of the income method and the net production method: the average of the two was adopted as final estimate. The ZWO series just supplemented—and slightly improved on—these original CBS estimates. The earliest estimates for the years until 1936 had been compiled by Derksen by the end of the thirties; the final series was published in 1948 and is an important source for the revision: CBS (1948) "Het nationale inkomen van Nederland, 1921-1939," No. 7 der Monografieën van de Nederlandse conjunctuur ("The National Income of the Netherlands, 1921-1939, "Monograph No. 7 on the Dutch Business Cycle). We shall refer to this source as Mon. 7. An important additional source contains detailed data for 1938, based on the first input-output table ever compiled for the Netherlands: CBS (1950) "De Nationale Jaarrekeningen; doeleinden, problemen, resultaten" (The National Accounts, Purposes, Problems, Results).

1.2. *Revision of the Historical Series*

In the revision of the 1921-39 data, the concepts and methods that are in current use have been employed as much as possible. Moreover, additional series have been compiled in order to be able to conform to the SNA "Consolidated Accounts for the Nation." One example of a change in *method* is that the national income is now fully compiled by means of the net production method. Two examples of *conceptual* changes are: a recalculation of consumption of fixed capital by means of the perpetual inventory method; and a recalculation of price and volume indices by means of a Paasche-Laspeyres pair. Examples of variables for which data have been compiled for the first time are: government investment; government consumption of fixed capital; exports of services; imports of services; income transfers to the rest of the world, income transfers from the rest of the world.

In addition to these examples of major changes, it should be emphasized that many of the series have been revised in a minor way; the combination of these changes leads to both upward and downward corrections of variables such as the domestic product. In Table 1 some differences between the revised and the original ZWO/CBS data are shown. On balance, net national and domestic product are revised upward, whereas the gross versions (that were never published, but were computed in the ZWO project and circulated informally) were revised downwards, GDP at market prices by some 4 percent, on average. These contrasting adjustments of net and gross variables are due to a correction of a major inconsistency in the ZWO data. This inconsistency concerns the treatment of fixed capital. In the original CBS national income computation a gross concept

TABLE 1

SOME DIFFERENCES BETWEEN REVISED DATA AND THE ORIGINAL ZWO/CBS DATA

(Average Annual Differences in Values, as a Percentage of ZWO/CBS Values

	1921-29	1930-38	1921-38
Net domestic product at market prices	2.6	2.2	2.4
Gross domestic product at market prices	−4.9	−2.6	−3.8

was correctly calculated, but not explicitly so. In the course of the calculation, consumption of fixed capital was implicitly substracted, yielding a net national income. Next, however, ZWO added an autonomous estimate of consumption of fixed capital to the CBS net income, in order to arrive at a gross concept. Consequently, the ZWO gross product was effectively obtained by starting out from a correct gross concept, deducting one value for consumption of fixed capital and adding another one!

In Table 2 we show the impact of the revision on the volume of national income, net and gross. Growth from 1921 to 1938 after revision exceeds the pre-revision estimate in the net case by 6 percent, in the gross case the increase is approximately 8 percent.

TABLE 2

VOLUME INDICES OF NATIONAL INCOME IN 1921 BEFORE AND AFTER REVISION, 1938 = 100

	Before revision	After revision
Net national income at market prices	72.6	68.5
Gross national income at market prices	73.5	67.8

2. THE REVISION OF THE INTERWAR SERIES

2.1. *Main Differences between Pre- and Post-Revision Data*

In the introduction we gave some highlights of the revision; the present section provides more details. The basic differences between the original ZWO/CBS data and the revised series are, for 1938, shown in Table 3.

In Mon. 7 the CBS determined the net national income at factor cost as the arithmetic average of the result of the income method and that of the net production method. This average was not altered in the ZWO project. In Table 3 it is shown in column 1, row 3. In the revision, the first step was to shift to the net production method. The correction is shown in column 2. For each of the years 1921-39, this correction was obtained from Mon. 7. For the period as a whole the correction averages out to nought, implying that no systematic shift in the level of the data has been caused by the shift to the net production method.

The national income according to the net production method is now shown in column 3, row 3. In the row above it, net primary income from the rest of the world is given. This consists of net compensation of employees and net property

TABLE 3

PRE- AND POST-REVISION AGGREGATE DATA, 1938, MILLIONS OF GUILDERS

	Column						
	1	2	3	4	5	6	7
1. Net domestic product at factor cost	4,502	−35	4,467		4,467	+107	4,574
2. Net primary income from the rest of the world	402		402	−45	357		357
3. Net national income at factor cost	4,904	−35	4,869	−45	4,824	+107	4,931
4. Consumption of fixed capital, enterprises					492	−107	385
5. Consumption of fixed capital, government					19		19
6. Gross national product at factor cost					5,335		5,335
7. Indirect taxes less subsidies					491	−23	468
8. Gross national product at market prices					5,826	−23	5,803

Column 1: According to Mon. 7
2: Correction for shift to the net production method
3: Sum of columns 1 and 2
4: Correction for secondary income from and capital transfers with the rest of the world
5: Sum of columns 3 and 4
6: Corrections for consumption of fixed capital and subsidies
7: Sum of columns 5 and 6.

and entrepreneurial income from abroad. Consequently, the first row of the table shows the net *domestic* product at factor cost. However, ZWO's net primary income from the rest of the world contains some secondary income flows (notably pensions of government personnel from the Netherlands East Indies) and capital flows (e.g. transfers to pension funds from the East Indies budget *in re* East Indies civilian and military government personnel in the Netherlands). In the revision we have corrected for these items, employing data from Mon. 7 and unpublished data from the CBS archives. The correction is shown in column 4, the resulting net national income at factor cost in column 5, row 3, along with the corresponding net domestic product, row 1.

Actually, the net national income of Mon. 7 has been calculated from a gross concept, by deducting the depreciation figures employed in enterprise accounts. This deduction has been done *implicitly*, because depreciation has been combined with some other costs. Thus, the Mon. 7 compilation according to the net production method calculated value added as output less costs. For most industries, costs included depreciation. Frequently, costs were available at the industry level as a single item only, hence no separate data for gross and net value added were obtained. Only a net figure was available. However, the consumption of fixed capital data that has, by this procedure, been implicitly used, does not fit into the modern concepts: valuation is at historical instead of current prices. To remedy this, the implicit consumption of fixed capital has been reconstructed in the present revision (cf. column 5, row 4 of Table 3) in order to be able to calculate the (implicit) original gross value added. The data have

been taken from "structure of industrial costs" reports that were produced in the twenties and thirties for many industries mainly by accountants or by the CBS itself. These reports were one of the major sources of data on costs in the Mon. 7 compilations. Parts of the reports were confidential and were never published.

A second correction necessary to obtain a conceptually modern estimate of gross national product concerns government consumption of fixed capital. In Mon. 7 government production was defined net. In the revision we added consumption of fixed capital. The item was estimated, employing the empirical post-war relation between the value of this item and government consumption: the former is a steady 4 percent of the latter. The correction is displayed in the fifth row of column 5. The sixth row shows the resulting gross national product at factor cost. This value has been used as the "fixed point" in the revision.

In order to calculate a correct net value from this "reconstructed" gross one, consumption of fixed capital has to be determined according to modern concepts. This is shown in column 7. First, of course, government consumption of fixed capital has to be deducted (row 5), next that of enterprises (row 4). The latter has been calculated according to the perpetual inventory method (PIM). In fact, the PIM was applied backwards, starting in 1938: for that year the CBS (1947) had calculated the national wealth, including the stock of capital goods. Using unpublished data from the CBS archives, the latter could be broken down into four types of assets: dwellings, other buildings, ships and other fixed assets. Current average economic lifetime data were applied to these. Investments in each of these types of assets were available in the ZWO series, both in current and in constant prices, so that the backward calculation to 1921 was feasible. The resulting values for consumption of fixed capital are somewhat lower, though not dramatically, than the implicit depreciation values of Mon. 7, cf. column 6 of Table 3. As a consequence, net national income after revision exceeds the original figure, cf. column 7, row 3. Naturally, the same applies for net domestic product (column 7, row 1).

The last two rows of Table 3 show the derivation of the revised GNP at *market* prices. For this derivation indirect taxes less subsidies have, of course, to be known. The original CBS value of this item is shown in column 5, row 7, the GNP at market prices that would be generated by the ZWO estimate is shown in row 8. However, the former estimate of the indirect taxes less subsidies item has been corrected in the revision (cf. column 6), viz. for subsidies to the railroads, ship-building and shipping companies that had been overlooked by ZWO. Data have been obtained from annual reports of the enterprises concerned and from publications such as company histories published on occasions such as centennials.

The deviation shown in Table 3 yields, for each year of the 1921–39 period, aggregate value added (both gross and net). In order to be able to create the complete SNA accounts for the nation, these aggregate values have to be broken down, both according to the government/enterprises division and according to its components (wages, operating surplus, etc.). The way this breakdown has been achieved is explained in the subsequent sections.

2.2. *Government Value Added*

In Table 3 we have already demonstrated the derivation of net domestic product at factor cost. Of this aggregate, government net value added at factor cost consists of wages and social charges only. To calculate these, the pertinent data published in Mon. 7 have been employed. The ZWO project did likewise. However, a number of corrections have been made:

—Wages in education have been added to those of government (ZWO have also added this item);

—Wages in a number of government establishments such as museums, libraries, public work departments and garbage collection have been added to government wages (ZWO only partially added these). Data were taken from statistics on and reports of social insurance institutions;

—A number of corrections for other groups of government personnel and for some categories of income that had been misclassified in Mon. 7 have been added. (Again ZWO applied only a part of these corrections);

—Finally, a breakdown was made into wages on the one hand and social charges on the other. This breakdown, which ZWO did not attempt to make, was based on the data from Mon. 7, Mon. 8 and from the CBS archives.

It should be emphasized that each of these corrections involves shifts of value added between government and enterprises only; hence, the net domestic product is not affected by them.

2.3. *Value Added of Enterprises*

Having determined both the net domestic product at factor cost and government net value added, the net value added at factor cost of enterprises is also fixed. In order to provide a reliable breakdown of the latter into its components, the distribution of value added over industries had to be known. This distribution is provided by Mon. 7 for the whole period 1921-39. By means of the 1938 data from Mon. 8 this industry-by-industry breakdown can be linked to the Mon. 7 data. To obtain this link, unpublished data from the CBS archives were employed. Once the industrial breakdown of value added had been obtained the latter was broken down into its components. To the resulting data several corrections had to be made:

—Pension flows from the rest of the world (in particular Dutch East Indies) were removed from social charges since they should be classified as capital transfers. Data were taken from Mon. 7;

—For hotels, restaurants and cafes, as well as for shipping, wages were raised. This correction was made because of incomplete coverage of the ZWO estimates. Data were taken from "cost reports" and reports of special investigations. For banking and insurances Mon. 7 did not provide data on wages and social charges, but these could be derived from unpublished data in the archives;

—Part of wages has been transferred to social charges.

Once wages and social charges were obtained, operating surplus (net) was found as a balancing item.

2.4. *Economic Relations with the Rest of the World*

Data for three groups of flows with the rest of the world have been revised: foreign trade in goods, foreign trade in services and income flows. *Foreign trade in goods* had already been revised in the ZWO project. The ZWO revision was based on CBS foreign trade statistics and the CBS (1945) balance of payments estimates for 1930–39. These data were supplemented by imputations for postal parcels and diamond trade, which were fairly substantial in the interwar period. In this revision, estimates for trade in silver were added.

Foreign trade in services was not explicitly determined by ZWO. Instead, the concept "net invisibles" was employed; it included the balance of trade in services and that of income and capital flows to and from the rest of the world. In the current revision these groups of flows have been separated and deconsolidated. In the case of *services*, the balance of payments data for 1930–39 were employed; for the twenties the 1930 values were extrapolated. The *primary and secondary income flows* to and from the rest of the world have been deconsolidated on the basis of unpublished data underlying Mon. 7.

2.5. *Final Expenditure*

Detailed private final consumption data for 1923–39 were compiled by the CBS (1949). These were employed by ZWO; estimates for 1921 and 1922 were added. In the revision three corrections were made:

—a number of categories of expenditure that are now considered as income transactions were removed from consumption;

—the values of consumption of "other goods and services" were adjusted; the original annual changes in this series were too violent to be plausible;

—expenditure of residents abroad and of non-residents in the Netherlands were estimated (also cf. foreign trade in services, section 2.4). This made it possible to derive both national and domestic private consumption.

Government consumption and investment were not explicitly determined by ZWO. In the revision, total government expenditure was broken down into consumption and investment, employing the data underlying the ZWO series, additional data from the archives and data on social insurances. In addition, some adjustments were made of government investment, particularly in respect of own account investments (including employment programs) and investments in government buildings. Gross investments in fixed assets by enterprises were, in the ZWO project, derived as a balancing item: first, total investment was determined on the basis of data on production, imports and exports of investment goods. Sources were CBS production surveys and foreign trade statistics, as well as unpublished data from the Ministry of Housing. Next, ZWO determined government investments and investment of government enterprises; investment of private enterprises then resulted as a balancing item. Essentially the same procedure was followed in the current revision. Total investments according to ZWO were the point of departure; the revised government investments were deducted in order to yield gross private investment. The latter's value was corrected for changes in livestock: in the ZWO total, all changes in livestock were considered as investment, whereas in the current national accounts a part is considered as change in stocks.

Consequently, we now have imports, exports, private consumption and investment, government consumption and investment. Since value added is a fixed point, changes in stocks are the balancing item, as they were in the ZWO project. Unfortunately, there are no direct observations of stocks with which the indirectly derived value could be compared. Instead, we can only employ some simple plausibility checks to judge the relative merits of the ZWO and the revised changes in stocks. In the 1921–38 period as a whole, ZWO obtained a substantial increase in stocks. This is an implausible result, because there was a considerable and fairly regular decline in prices throughout the interwar period. Only in a few years did prices rise. In a period of falling prices, entrepreneurs usually decrease the value of their stocks. Hence the increases in stocks found by ZWO were probably not correct. In contrast, the revised stock data display a decline of stocks over the period as a whole. To be fair it should be added that the total value of the decline is a bit higher than we would have predicted. Possibly, one explanation is that in 1938–39 the government purchased very sizeable stocks in anticipation of the Second World War. These appear as government consumption instead of changes in stocks. Another plausibility check was made. The change in stock data were compared with those predicted by econometric equations the CPB based on postwar data. These predicted values did not correlate much better with the revised values than with the ZWO data. In fact, correlations were poor in both cases. This may be caused by systematic changes in behaviour since the Second World War. The new changes in stock data were also compared with the changes in the volume of imports. Here approximately the same relation turns out to hold as in the 1952–72 period, the years 1930–32 being an exception. On balance, it seems reasonable to conclude that the revised change in stock data are an improvement on the ZWO data, but that they should not be considered as the most reliable series in the national accounting data for the interwar period.

2.6. *Constant-Price Data*

Previously, the only long-term national accounting series of price and volume data published by the CBS are those for net national income at market prices. In addition, some isolated series were published for the interwar period, e.g. for private consumption 1923–39, and unit-values and volume data for imports and exports of goods. In the ZWO project, price and volume series were compiled for a large number of variables, but these were never published. In compiling them, ZWO employed Fisher indices with annually updated weights. Hence, long-term comparisons were based on chain indices.

The same procedure has been introduced in the national accounts for 1981 onwards, with the difference that a Paasche price index (current-year weights) and a Laspeyres volume index (previous year weights and prices) are employed. The same approach was followed in the revision of the interwar data. The shifting weights approach has the advantage that annual growth rates are better calculated than those with constant weights of some base year. The disadvantage is that long-term comparisons of levels in constant prices can only be made on the basis of chain indices. Since growth rates and the relations between growth rates of different variables are the central issue in the analysis of the business cycle, the advantages of shifting weights outweigh the disadvantages.

Generally speaking, price indices were derived first and volume indices obtained next by deflating current-price data. We discuss the deflation of foreign trade first, next that of the components of domestic final expenditure.

For the purposes of the deflation, imports of goods have been broken down into eighteen commodity groups. In the case of imports of raw materials, there is a breakdown into ten groups according to industries of destination. The remaining eight commodity groups are: fuels, foodstuffs, non-food consumption goods, postal parcels, diamonds, silver, and other goods. The deflators for raw materials, fuels and consumption goods are taken from CBS (1951). They are based on foreign trade statistics and hence have the character of unit-value indices. A Paasche weighted average of these indices has been employed as a deflator for postal parcels. Prices of diamonds are assumed to have been constant. For silver, unit-values were available from the foreign trade statistics. For "other goods," the average deflator of raw materials was used. Imports of services were deflated by means of the average deflator of the imports of goods.

In the case of exports, 19 commodity groups were distinguished. Exports of industrial products were broken down in 10 groups, corresponding with the industries of origin. Agricultural products were broken down in three groups: crops, fruits and vegetables, and livestock products. In addition, fishing products, re-exports, postal parcels, diamonds, silver and other goods were distinguished. Most deflators were taken from CBS (1951). Prices of diamonds were, once more, taken to have been constant. For silver a unit-value was obtained and postal parcels were deflated with an average of the indices for industrial and agricultural products. Exports of services were deflated by means of an average of the deflators of the exports of goods and of consumption expenditure of non-residents in the Netherlands.

Data for the deflation of private consumption were taken from CBS (1949), unpublished ZWO reports and from Barten's (1966) revision of previous CBS data. In total, 98 groups of goods and services were distinguished. The Barten data refer to domestic consumption. In order to arrive at a deflator of national consumption, deflators for consumption of residents abroad and of non-residents in the Netherlands were needed. For lack of data, the latter was taken to be equal to that of domestic consumption. The former was assumed to equal the deflator of imports.

The deflator of government consumption is an average of those of government wages and social charges, net material consumption and consumption of fixed capital. For the first component, a ZWO wage index was employed. It is a weighted average of wages of a number of characteristic groups of government employees. For the second component the wholesale price index of final products was used for 1926–39; for 1921–25 an average of the price indices for foodstuffs and raw materials was employed. The third component was deflated with the price index of government buildings.

Government investment was deflated by means of a weighted average of the indices for its components: infra-structural works, government buildings, major repair and maintenance, and own account investment. Data were taken from reports of the ministries and departments concerned. In case of the wage part of own account investments, the wage deflator referred to above has been employed.

Deflators for private investments were taken from the ZWO reports. The basic data are on prices of new dwellings, private enterprise buildings and other private construction, investment goods produced by the metal industry (shipbuilding being treated separately), imports of investment goods, major repair and maintenance of buildings, and infra-structural works. The ZWO data on investments produced by the construction industry have been taken from reports of the Ministry of Housing and from other departmental reports. No prices of investment goods produced by the domestic metal industry were available. Therefore, the unit-value indices for substitute goods, published in foreign trade statistics were employed, after applying a smoothing procedure.

Consumption of fixed capital by enterprises was deflated by means of the deflator of private investment. Changes in stock were deflated by means of the general wholesale price index, except for 1921-25 where the average of the indices for foodstuffs and raw materials was used.

The set of deflators just discussed makes it possible to determine the values of the categories of final expenditure and of imports in prices of the previous year. Domestic product in prices of the previous year is then obtained as a balancing item. In order to obtain the volume of the national product, net primary income from the rest of the world has to be deflated. To attain this end we deflated, following current methodology, primary income from the rest of the world with the deflator of exports and primary income to the rest of the world with that of imports.

2.7. *Results of the Revision*

The revision makes it possible to create a virtually complete set of SNA accounts for the nation for the interwar period. The only missing data are those on transactions in intangible assets. Even for recent years the CBS does not have sufficient information to compile reliable estimates of the value of these transactions. The full set of accounts is given in the appendix. For purposes of comparison with the series for 1969-85, see Den Bakker, Huitker and van Bochove (1987).

In Table 4 we show the published version of the domestic product account before the revision. Item 5 in this table contains changes in stocks (20 million). Since the latter is a balancing item, the balance of all errors in the accounts ends

TABLE 4

DOMESTIC PRODUCT BEFORE THE REVISION, 1938 ("NATIONAL ACCOUNTS 1985")

	Million Guilders
1. Net domestic product at market prices	4,993
2. Imports of goods	1,459
3. Private consumption	4,400
4. Government expenditure	700
5. Net private investment and changes in stocks	60
6. National expenditure (net)	5,160
7. Exports of goods	1,074
8. Net exports of services	218

TABLE 5

DETERMINATION OF CHANGES IN STOCKS BEFORE THE REVISION, 1938 (ZWO DATA)

Source		Million Guilders
Mon. 7	Net national income at factor cost	4,904
Mon. 7	Indirect taxes less subsidies	491
Mon. 7	Net national income at market prices	5,395
ZWO	Consumption of fixed capital	631
	Gross national product at market prices	6,026
ZWO/CBS	Imports of goods	1,459
	Total (supply)	7,485
CBS (1949)	Private national consumption	4,400
Mon. 8	Government consumption	700
ZWO	Gross private investment in fixed assets	671
ZWO/CBS	Exports of goods	1,074
10Y BOP	Net services and income to the rest of the world (of which 402 = income)	620
	Sub-total (disposition)	7,465
Balancing item	Changes in stocks	20
	Total (disposition = supply)	7,485

up in this item. Therefore, it is instructive to show how the changes in stocks have been determined by ZWO.

In Table 5 we show that the value of the consumption of fixed capital directly affects that of the change in stocks. As explained in section 2.1, consumption of fixed capital has been recalculated in the revision, by means of the perpetual inventory method. This yields a 1921 value of consumption of fixed capital 600 million guilders lower than before the revision (a downward revision of some 60 percent). The smallest nominal revision correction is the one for 1936; but even there the downward correction is 219 million guilders or 42 percent. These sizeable corrections were necessary because ZWO had overestimated consumption of fixed capital. It was put at 3.6 percent of the capital stock, without taking the latter's composition and the economic lifetimes of the components into account. Hence, for 1938 the 3.6 percent turns out to be too high. The ZWO computation started at the 1938 capital stock and went backwards to 1921. Since the 1938 consumption of fixed capital was overestimated, so was the capital stock for previous years and hence consumption for those years, and so on. As a result, the 1921 capital stock according to ZWO is implausibly high. The resulting differences between ZWO and the revision cause a substantial downward revision of the balancing item "change in stocks."

Tables 6-8 show the average annual percent differences between the revised and the ZWO data. In addition to those for the whole interwar period, data for the twenties and thirties are shown separately, because there are some systematic differences between the two periods. The year 1939 is omitted, because the ZWO project did not cover it. The operating surplus has been revised upward by some 6 percent. The net income and product aggregates have been raised by some 2-3 percent, the gross versions are adjusted some 3-9 percent downwards.

In Table 7 we show the impact of the revision on the levels of the variables distinguished in the publications to date. Hence it corresponds to Table 4. In

TABLE 6

DIFFERENCES BETWEEN REVISED AND ZWO DATA, AS PERCENTAGE OF THE LATTER: VALUE ADDED AND AGGREGATE PRODUCT AND INCOME MEASURES

	Averages of annual percent differences		
	1921-29	1930-38	1921-38
Wages and social charges	−0.3	1.6	0.7
Operating surplus	6.6	4.9	5.8
Net domestic product at factor cost	3.0	3.0	3.0
Indirect taxes less subsidies	−3.2	−5.7	−4.5
Net domestic product at market prices	2.6	2.2	2.4
Consumption of fixed capital	−55.0	−41.2	−48.1
GDP at market prices	−4.9	−2.6	−3.8
Net primary income from abroad	−9.4	−15.0	−12.2
Net national income at factor cost	1.7	1.8	1.8
Net national income at market prices	1.5	1.2	1.3
GNP at market prices	−5.3	−3.3	−4.3
Net secondary income from abroad	—	—	—
Gross disposable income at market prices	−5.2	−3.2	−4.2

TABLE 7

DIFFERENCES BETWEEN REVISED AND ZWO DATA, AS PERCENTAGE OF THE LATTER: DOMESTIC PRODUCT ACCOUNT, NET

	Average of Annual Percent Differences		
	1921-29	1930-38	1921-38
1. Net domestic product at market prices	2.6	2.2	2.4
2. Imports of goods	0.1	0.7	0.4
3. Private consumption	−0.2	−0.4	−0.3
4. Government expenditure (net)	5.2	3.3	4.3
5. Net private investment and changes in stocks	26.9	77.3	52.1
6. National expenditure (net)	1.7	1.8	1.8
7. Exports of goods	0.5	0.6	0.6
8. Net exports of services	4.4	4.9	4.7

TABLE 8

DIFFERENCES BETWEEN REVISED AND ZWO DATA, AS PERCENTAGE OF THE LATTER: DOMESTIC PRODUCT ACCOUNT, GROSS

	Averages of Annual Percent Differences		
	1921-29	1930-38	1921-38
1. GDP at market prices	−4.9	−2.6	−3.8
2. Imports of goods	0.1	0.7	0.4
3. Private consumption	−0.2	−0.4	−0.3
4. Government expenditure (gross)	8.1	6.2	7.2
5. Gross private investment and changes in stocks	−33.0	−32.3	−32.7
5a of which: gross private investment	−0.5	1.5	0.5
6. National expenditure (gross)	−3.4	−1.9	−2.7
7. Exports of goods	0.5	0.6	0.6
8. Net exports of services	4.4	4.9	4.7

Table 8 we show the gross version of the variables in Table 7. The most sizeable adjustments are those of government expenditure (some 4 percent increase), net investment and changes in stocks (25–75 percent) and net exports of services. In the case of the gross variables, the most important change is in gross investments including changes in stocks; a downward revision by one-third. This, however, is not the sole cause of the changes in the development of the indices; value changes are another cause.

Prices and volume series are presented in the Appendix. To illustrate the impact of the revision on the corresponding ZWO series (most of which were never published), in table 9 we show price and volume indices for 1921 and 1929 (1938 = 100) for private consumption and foreign trade in goods. It should be borne in mind that the index formulas employed in the revision differ from the Fisher indices of ZWO.

TABLE 9

REVISION AND ZWO: PRICE AND VOLUME INDICES OF PRIVATE CONSUMPTION AND FOREIGN TRADE IN GOODS

	1921		1929	
	ZWO	Revision	ZWO	Revision
	Price indices, 1938 = 100			
Private consumption	144	162	130	132
Exports of goods	216	210	159	157
Imports of goods	201	205	156	158
	Volume indices, 1938 = 100			
Private consumption	76	67	90	88
Exports of goods	67	69	127	129
Imports of goods	84	83	129	128

APPENDIX: CONSOLIDATED ACCOUNTS FOR THE NATION (in MILLIONS GUILDERS)

TABLE A.1

ACCOUNT 1: GROSS DOMESTIC PRODUCT AND EXPENDITURE

Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
Wages and salaries										
Enterprises	2,213	2,097	1,982	1,991	2,032	2,089	2,154	2,269	2,391	2,455
Government	418	413	395	376	361	364	363	365	383	394
Employers social contributions										
Enterprises	62	70	65	66	61	72	72	76	80	108
Government	7	16	22	21	20	21	22	23	24	24
Operating surplus	2,304	2,210	2,139	2,400	2,508	2,542	2,639	2,794	2,836	2,485
Consumption of fixed capital										
Enterprises	388	324	321	316	314	313	319	340	361	385
Government	20	20	19	18	18	18	18	17	19	20
Indirect taxes	300	300	296	303	330	347	362	379	388	377
LESS: Subsidies	33	31	23	—	—	—	—	—	—	—
Gross domestic product at market prices	5,679	5,419	5,216	5,491	5,644	5,766	5,949	6,263	6,482	6,248
Government final consumption expenditure	476	472	444	428	421	411	411	403	436	453
Private final consumption expenditure	4,813	4,766	4,563	4,651	4,642	4,672	4,815	5,026	5,139	5,150
Increase in stocks	−378	−371	−240	−46	63	117	27	77	120	−278
Gross fixed capital formation										
Enterprises	1,071	839	670	684	708	773	793	876	914	1,029
Government	335	262	212	195	197	211	256	282	338	367
Exports of goods and services	2,149	1,960	2,051	2,415	2,569	2,521	2,687	2,782	2,775	2,322
LESS: Imports of goods and services	2,787	2,509	2,484	2,836	2,956	2,939	3,040	3,183	3,240	2,795
Gross domestic product at market prices	5,679	5,419	5,216	5,491	5,644	5,766	5,949	6,263	6,482	6,248

Product	1931	1932	1933	1934	1935	1936	1937	1938	1939
Wages and salaries									
Enterprises	2,319	2,015	1,939	1,905	1,811	1,794	1,895	1,981	2,055
Government	408	401	385	359	353	342	340	343	350
Employers social contributions									
Enterprises	123	95	97	95	91	84	100	105	115
Government	26	25	24	24	24	24	23	24	25
Operating surplus	2,079	1,944	1,873	1,833	1,869	1,955	2,171	2,121	2,484
Consumption of fixed capital									
Enterprises	383	340	311	306	289	286	340	385	419
Government	21	21	20	19	19	18	18	19	19
Indirect taxes	361	370	391	415	431	431	483	482	524
LESS: Subsidies	3	17	32	36	38	21	14	14	6
Gross domestic product at market prices	5,717	5,194	5,008	4,920	4,849	4,913	5,356	5,446	5,985
Government final consumption expenditure	473	466	445	435	417	410	420	444	433
Private final consumption expenditure	4,889	4,537	4,391	4,230	4,109	4,091	4,310	4,412	4,705
Increase in stocks	−464	−334	−179	−266	−193	−66	64	−222	103
Gross fixed capital formation									
Enterprises	826	544	482	504	455	425	507	685	716
Government	392	316	257	249	225	201	223	278	305
Exports of goods and services	1,755	1,151	1,011	1,023	1,017	1,118	1,678	1,558	1,522
LESS: Imports of goods and services	2,154	1,486	1,399	1,255	1,181	1,266	1,846	1,709	1,799
Gross domestic product at market prices	5,717	5,194	5,008	4,920	4,849	4,913	5,356	5,446	5,985

TABLE A.2

ACCOUNT 3: NATIONAL DISPOSABLE INCOME AND ITS APPROPRIATION (in MILLIONS GUILDERS)

Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
Final consumption expenditure	5,289	5,238	5,007	5,079	5,063	5,083	5,226	5,429	5,575	5,603
Saving	490	214	270	523	746	919	942	1,088	1,043	761
Appropriation of disposable income	5,779	5,452	5,277	5,602	5,809	6,002	6,168	6,517	6,618	6,364
Net domestic product at market prices	5,271	5,075	4,876	5,157	5,312	5,435	5,612	5,906	6,102	5,843
Compensation of employees, property and entrepreneurial income from the rest of the world, net	506	374	398	442	494	564	553	608	513	519
Net national income at market prices	5,777	5,449	5,274	5,599	5,806	5,999	6,165	6,514	6,615	6,362
Other current transfers from the rest of the world, net	2	3	3	3	3	3	3	3	3	2
Disposable income	5,779	5,452	5,277	5,602	5,809	6,002	6,168	6,517	6,618	6,364

Product	1931	1932	1933	1934	1935	1936	1937	1938	1939
Final consumption expenditure	5,362	5,003	4,836	4,665	4,526	4,501	4,730	4,856	5,138
Saving	277	58	25	74	199	362	595	545	752
Appropriation of disposable income	5,639	5,061	4,861	4,739	4,725	4,863	5,325	5,401	5,890
Net domestic product at market prices	5,313	4,833	4,677	4,595	4,541	4,609	4,998	5,042	5,547
Compensation of employees, property and entrepreneurial income from the rest of the world, net	324	226	182	142	182	252	325	357	342
Net national income at market prices	5,637	5,059	4,859	4,737	4,723	4,861	5,323	5,399	5,889
Other current transfers from the rest of the world, net	2	2	2	2	2	2	2	2	1
Disposable income	5,639	5,061	4,861	4,739	4,725	4,863	5,325	5,401	5,890

TABLE A.3

ACCOUNT 5: CAPITAL FINANCE (in MILLIONS GUILDERS)

Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
Gross fixed capital formation and increase in stocks	1,028	730	642	833	968	1,101	1,076	1,235	1,372	1,118
Net lending to the rest of the world	−86	−130	5	64	154	196	252	267	108	110
Gross accumulation	942	600	647	897	1,122	1,297	1,328	1,502	1,480	1,228
Saving	490	214	270	523	746	919	942	1,088	1,043	761
Compensation of fixed capital	408	344	340	334	332	331	337	357	380	405
Capital transfers from the rest of the world, net	44	42	37	40	44	47	49	57	57	62
Finance of gross accumulation	942	600	647	897	1,122	1,297	1,328	1,502	1,480	1228

TABLE A.3—continued

ACCOUNT 5: CAPITAL FINANCE (in MILLIONS GUILDERS)

Product	1931	1932	1933	1934	1935	1936	1937	1938	1939
Gross fixed capital formation and increase in stocks	754	526	560	487	487	560	794	741	1,124
Net lending to the rest of the world	−28	−67	−164	−52	54	142	205	255	111
Gross accumulation	726	459	396	435	541	702	999	996	1,235
Saving	277	58	25	74	199	362	595	545	752
Consumption of fixed capital	404	361	331	325	308	304	358	404	438
Capital transfers from the rest of the world, net	45	40	40	36	34	36	46	47	45
Finance of gross accumulation	726	459	396	435	541	702	999	996	1,235

TABLE A.4

ACCOUNT 6: ALL ACCOUNTS-EXTERNAL TRANSACTIONS (in MILLIONS GUILDERS)

Product	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
					Current transactions					
Exports of goods	1,566	1,407	1,510	1,909	2,055	1,992	2,133	2,208	2,187	1,830
Exports of services	583	553	541	506	514	529	574	574	588	492
Compensation of employees from the rest of the world	—	—	—	—	—	—	—	—	—	—
Property and entrepreneurial income from the rest of the world	657	496	513	557	607	685	683	743	661	654
of which Dutch colonies	346	252	258	283	312	349	330	303	260	199
Other current transfers from the rest of the world	2	3	3	3	3	3	3	3	3	2
Current receipts	2,808	2,459	2,567	2,975	3,179	3,209	3,373	3,528	3,439	2,978
Imports of goods	2,500	2,237	2,218	2,588	2,704	2,680	2,758	2,901	2,951	2,552
Imports of services	287	272	266	248	252	259	282	282	289	243
Compensation of employees to the rest of the world	—	—	—	—	—	—	—	—	—	—
Property and entrepreneurial income to the rest of the world	151	122	115	115	113	121	130	135	148	135
Other current transfers to the rest of the world	—	—	—	—	—	—	—	—	—	—
Surplus of the nation on current transactions	−130	−172	−32	24	110	149	203	210	51	48
Disposal of current receipts	2,808	2,459	2,567	2,975	3,179	3,209	3,373	3,528	3,439	2,978
					Capital transactions					
Surplus of the nation on current transactions	−130	−172	−32	24	110	149	203	210	51	48
Capital transfers from the rest of the world, net	44	42	37	40	44	47	49	57	57	62
Receipts	−86	−130	5	64	154	196	252	267	108	110
Net lending to the rest of the world	−86	−130	5	64	154	196	252	267	108	110
Disbursements	−86	−130	5	64	154	196	252	267	108	110

TABLE A.4—continued

ACCOUNT 6: ALL ACCOUNTS-EXTERNAL TRANSACTIONS (in MILLIONS GUILDERS)

Product	1931	1932	1933	1934	1935	1936	1937	1938	1939
					Current transactions				
Exports of goods	1,374	879	755	737	711	796	1,212	1,086	1,009
Exports of services	381	272	256	286	306	322	466	472	513
Compensation of employees from the rest of the world	—	—	—	—	—	—	—	—	—
Property and entrepreneurial income from the rest of the world	445	328	271	232	260	357	482	506	460
of which Dutch colonies	102	77	74	82	91	107	146	192	178
Other current transfers from the rest of the world	2	2	2	2	2	2	2	2	1
Current receipts	2,202	1,481	1,284	1,257	1,279	1,477	2,162	2,066	1,983
Imports of goods	1,974	1,354	1,256	1,081	991	1,086	1,610	1,465	1,563
Imports of services	180	132	143	174	190	180	236	244	236
Compensafition of employees to the rest of the world	—	—	—	—	—	—	—	—	—
Property and entrepreneurial income to the rest of the world	121	102	89	90	78	105	157	149	118
Other current transfers to the rest of the world	—	—	—	—	—	—	—	—	—
Surplus of the nation on current transactions	−73	−107	−204	−88	20	106	159	208	66
Disposal of current receipts	2,202	1,481	1,284	1,257	1,279	1,477	2,162	2,066	1,983
					Capital transactions				
Surplus of the nation on current transactions	−73	−107	−204	−88	20	106	159	208	66
Capital transfers from the rest of the world, net	45	40	40	36	34	36	46	47	45
Receipts	−28	−67	−164	−52	54	142	205	255	111
Net lending to the rest of the world	−28	−67	−164	−52	54	142	205	255	111
Disbursements	−28	−67	−164	−52	54	142	205	255	111

TABLE A.5

FINAL EXPENDITURE, NATIONAL INCOME AND DOMESTIC PRODUCT: VOLUME CHANGES (in PERCENTS)

Product	1922	1923	1924	1925	1926	1927	1928	1929	1930
Government final consumption expenditure	2.7	−5.3	−0.2	4.0	1.2	0.2	−4.1	5.2	4.6
Private final consumption expenditure	10.3	0.0	1.8	−0.7	5.7	4.3	3.9	2.8	5.2
Gross fixed capital formation									
Enterprises	−6.1	−13.6	8.5	11.5	10.7	3.4	10.1	4.1	11.1
Government	−4.5	−9.9	−3.3	4.6	10.2	22.3	9.0	17.4	9.8
Exports of goods and services	13.8	5.9	14.4	5.3	5.1	8.8	3.4	0.4	−8.0
Goods	12.2	8.6	22.8	6.6	3.9	8.2	4.4	−0.3	−8.0
Services	18.0	−0.9	−9.1	0.6	10.1	10.8	−0.2	3.1	−8.2
Imports of goods and services	10.2	−1.5	10.0	3.9	6.3	4.8	4.2	4.8	−4.9
Goods	9.5	−1.3	12.4	4.2	6.0	4.3	4.7	4.8	−4.6
Services	16.0	−2.6	−10.2	1.2	9.9	10.4	−0.4	5.7	−7.3
Gross domestic product at market prices	6.5	2.1	7.2	3.7	6.7	4.6	4.8	2.4	−1.1
Net national income at market prices	4.7	1.4	7.0	4.4	8.2	3.9	5.0	1.7	−0.5

TABLE A.5—continued

FINAL EXPENDITURE, NATIONAL INCOME AND DOMESTIC PRODUCT: VOLUME CHANGES (in PERCENTS)

Product	1931	1932	1933	1934	1935	1936	1937	1938	1939
Government final consumption expenditure	6.4	5.1	1.7	−1.8	−3.4	2.2	−0.7	6.2	−3.2
Private final consumption expenditure	1.7	1.5	0.7	−2.1	0.6	3.7	0.8	0.5	5.9
Gross fixed capital formation									
Enterprises	−14.1	−23.4	−2.8	5.2	−3.43	−5.1	2.8	21.9	−1.2
Government	13.4	−9.4	−11.1	−1.6	−5.6	−7.1	4.5	17.9	6.1
Exports of goods and services	−7.8	−16.5	−3.6	5.1	4.6	3.3	19.1	−4.9	−4.6
Goods	−8.2	−18.4	−5.6	1.5	1.5	5.1	20.6	−8.3	−9.3
Services	−6.1	−9.7	2.9	16.0	12.6	−0.7	15.2	3.6	6.1
Imports of goods and services	−5.0	−14.0	5.4	−4.1	−3.3	2.0	8.2	−0.9	4.9
Goods	−4.6	−14.5	3.8	−8.0	−5.8	4.3	10.0	−2.5	6.3
Services	−8.6	−8.3	21.2	30.1	12.1	−10.0	−2.8	10.6	−3.7
Gross domestic product at market prices	−4.6	−0.9	0.4	−1.1	2.7	5.4	5.7	−3.2	7.7
Net national income at market prices	−6.4	−2.4	0.4	−1.1	3.2	7.0	3.7	−0.8	7.9

TABLE A.6

FINAL EXPENDITURE AND DOMESTIC PRODUCT: ANNUAL CHANGES OF DEFLATORS (IN PERCENTS)

Product	1922	1923	1924	1925	1926	1927	1928	1929	1930
Private final consumption expenditure	−10.2	−4.3	0.1	0.5	−4.8	−1.2	0.5	−0.5	−4.7
Gross fixed capital formation									
Enterprises	−16.6	−7.6	−5.9	−7.2	−1.4	−0.7	0.4	0.2	1.4
Government	−18.0	−10.0	−5.0	−3.4	−2.7	−0.7	1.2	2.0	−1.0
Exports of goods and services	−19.8	−1.2	2.9	1.0	−6.7	−2.0	0.1	−0.7	−9.0
Imports of goods and services	−18.3	0.5	3.8	0.3	−6.5	−1.3	0.5	−2.9	−9.3
Gross Domestic product at market prices	−10.4	−5.7	−1.8	−0.8	−4.3	−1.4	0.4	1.1	−2.5

Product	1931	1932	1933	1934	1935	1936	1937	1938	1939
Private final consumption expenditure	−6.7	−8.6	−3.9	−1.6	−3.4	−4.0	4.5	1.9	0.7
Gross fixed capital formation									
Enterprises	−6.6	−14.1	−8.9	−0.6	−6.3	−1.6	16.1	10.8	5.7
Government	−5.7	−10.9	−8.7	−1.5	−4.4	−4.0	6.0	5.7	3.4
Exports of goods and services	−18.1	−21.4	−8.9	−3.8	−5.0	6.4	26.1	−2.3	2.4
Imports of goods and services	−18.9	−19.8	−10.7	−6.5	−2.7	5.0	34.7	−6.6	0.3
Gross domestic product at market prices	−4.1	−8.4	−3.9	−0.6	−4.1	−3.8	3.1	5.0	2.0

REFERENCES

Barten, A. P., Het verbruik door gezinshuishoudingen in Nederland, 1921-1939 en 1948-1962, *Rapport 6604* Econometric Institute, Netherlands School of Economics, Rotterdam, 1966.

CBS (Centraal Bureau voor de Statistiek), *Jaarstatistiek van den in-, uit-en doorvoer over 1938, deel I,* N.V. Drukkerij Albani,'s-Gravenhage, 1939.

———, Tien jaren Internationale Betalingsbalans, *Maandschrift van het Centraal Bureau voor de Statistiek,* blz 216-220, jaargang 40, 1945.

———, Uitkomsten van enige berekeningen betreffende het nationaal vermogen in Nederland in 1938, *Statistische en econometrische onderzoekingen,* nieuwe reeks, jaargang, 2, no. 3, blz, 66-74, Uitgeversmaatschappij W. de Haan N.V., Utrecht, 1947.

———, Het nationale inkomen van Nedeland 1921-1939, *No. 7 der Monografieën van de Nederlandse Conjunctuur,* Uitgeversmaatschappij W. de Haan N.V., Utrecht, 1948.

CBS, De consumptieve uitgaven in Nederland, 1923–1939, *Statistische en econometrische onderzoekingen*, nieuwe reeks, jaargang 4, no. 3, blz. 99–143, Uitgeversmaatschappij W. de Haan, N.V., Utrecht, 1949.

———, De Nationale Jaarrekeningen: doeleinden, problemen, resulaten, *No. 8 der Monografieën van de Nederlandse Conjunctuur*, Uitgeversmaatschappij W. de Haan N.V., Utrecht, 1950.

———, Hoeveelheids- en prijs-(unit-value)indexcijfers van de buitenlandse handel voor de periode 1921–1939, *Statistische en econometrische onderzoekingen*, nieuwe reeks, jaargang 6, no. 2, 2e kwartaal 1951, blz. 112–120, Uitgeversmaatschappij W. de Haan N.V., Utrecht, 1951.

———, *Zestig jaren statistiek in tijdreeksen 1899–1959*, Chapter P, Nationale rekeningen, Uitgeversmaatschappij W. de Haan N.V., Zeist, 1959.

CPB (Centraal Plan Bureau), *Reports VI-VI8 on the ZWO project* (unpublished), 1953–1956.

Den Bakker, G. P., Huitker, T. A., and van Bochove, C. A., The Dutch Economy, 1921–1939 and 1969–1985: A Comparison Based on Revised Macro-economic Data for the Interwar Period, *National Accounts Occasional Paper* no. NA-018, Centraal Bureau voor de Statistiek, Voorburg, 1987.

Engerman, S. L. and Gallman, R. E. (eds.), *Long-term Factors in American Economic Growth*, University of Chicago Press, Chicago and London, 1986.

Gongrijp, G., De sociaal-economische betekenis van Nederlands-Indië voor Nederland, *De Nederlandse volkshuishoudng tussen twee wereld-oorlogen*, deel III, Uitgeverij het Spectrum, Utrecht/Antwerpen, 1952.

Maddison, A., *Phases of Capitalist Development*, Oxford University Press, Oxford, 1982.

Mitchell, B. R., *European Historical Statistics 1750–1975*, Second Revised Edition, Facts on File Inc., New York/Macmillan, London, 1980.

United Nations, *National Income Statistics 1938–1947*, Statistical Office of the United Nations, New York 1948.

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