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1. Overview of the system of quarterly accounts

1.1 Organisation and institutional arrangements

Statistics Netherlands (CBS) and the Central Commission for Statistics (CCS)¹ were established under the *Statistics Act* of 2003². The main objectives of CBS are to promote official statistics that meet the demands of users for purposes of practice, policy, and science, and to promote accuracy and completeness of all statistics published. Against this background, the responsibility for collecting, processing, and disseminating (at the national and international level) all macroeconomic statistics (excluding balance of payments and monetary statistics) rests with Statistics Netherlands. This responsibility is clearly defined in the *Statistics Act*, sections 3 and 4, which state that:

- The task of CBS is to carry out statistical research for the government for practice, policy, and research purposes and to publish the statistics compiled; and
- CBS is the national authority for the production of (European) Community statistics for the Netherlands.

The Netherlands' membership in the European Union (EU) implies that European law applies to a large portion of the Dutch statistical programs. European Council Regulation 322/97 stipulates that national authorities shall be responsible for producing European Community statistics at the national level and that Community statistics shall be produced on the basis of uniform standards and, in specific duly justified cases, of harmonized standards. The production of national accounts statistics is not only subject to EU law but also to verification by the European Commission³. As part of the European Statistical System (ESS), CBS compiles and disseminates a significant share of its data according to the legal requirements of this system.

Quarterly National Accounts (QNA) and Annual National Accounts (ANA) are products of the National Accounts Department of the Division of Macro Economic Statistics and Publications of the CBS. The final responsibility is in the hands of a product manager QNA and a product manager ANA. Specialists on branches of industries, final expenditure, Labour Accounts and commodity balancing work together under the leadership of project managers on both QNA and ANA. Of a National Accounts staff of approximately 90 persons about 30 (10 fte's) are involved in the compilation of QNA.

¹ According to the *CBS Act, 2003 (Statistics Act)*, the CCS is an independent administrative body without corporate rights and has the following duties: (a) to foster the provision of statistical information for the government which meets the needs of practice, policy and science; (b) to foster the accuracy and completeness of the statistics to be published for the government; (c) to assess the multi-annual program and the work program of the CBS; (d) to ensure that the CBS acquires data in such a way as to minimize the ensuing administrative burden for companies and institutions; (e) to ensure that the statistical work carried out by the CBS for third parties does not lead to competition with private suppliers of similar services which would be undesirable from the perspective of the proper operation of market forces; and (f) to oversee the exercise by the Director-General of the power to make available sets of data for the purpose of statistical or scientific research.

² This Act replaced the *Netherlands Statistics Act, 1996* which, in turn, replaced the *Royal Act of 1899*.

³ The European Statistical System (ESS) comprises the Statistical Office of the European Communities (EUROSTAT) and the statistical offices, ministries, agencies, and central banks that collect official statistics in the European Union Member States, as well as Iceland, Liechtenstein, and Norway. The ESS functions as a network in which EUROSTAT's role is to lead the way in the harmonization of statistics in close cooperation with the national statistical authorities. The ESS's work concentrates on EU policy areas, but with the extension of EU policies, harmonization has consequently been extended to nearly all statistical fields.

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1.2 Publication timetable, revisions policy and dissemination of QNA

Data on GDP and its main components are disseminated 45 calendar days after the reporting period (flash estimate). Revised figures are available 90 calendar days after the reporting period (regular estimate). The breakdown by category includes consumption expenditure by households and by government, gross fixed capital formation, changes in stocks, exports and imports of goods and services, total value added by economic activity and the cost components of value added. In the flash estimates consumption expenditure by households, exports and imports, total value added and the value added components are disseminated at a higher level of aggregation or are not disaggregated at all.

1.3 QNA compilation approach

As with the compilation of ANA supply and use tables (SUT) are the balancing framework in compiling QNA. These tables are simultaneously compiled both in current prices and in constant prices. The quarterly SUT distinguishes about 120 branches of industries and 200 categories of goods and services. After filling the SUT with basic data statistical discrepancies between the supply and use of commodities appear. Subsequently these statistical discrepancies are eliminated in a process of simultaneous balancing.

1.4 Balancing, benchmarking and other reconciliation procedures

In the balancing procedure for each commodity supply data on production and imports is confronted with data on intermediate and final use. The initial statistical discrepancies are removed in the balancing process, so that in the end a consistent SUT is obtained with all commodities (rows) in balance. The consistent SUT yields identical macro-aggregates for the three approaches to GDP; i.e. the production approach, the expenditure approach and the income approach.

There are benchmarking procedures of QNA and ANA in March and June that provides for a complete linking-up of QNA and ANA.

Moreover, the SUT-data are harmonized with the Labour Accounts and the Quarterly Sector Accounts.

1.5 Volume estimates

In compiling SUT in constant and current prices a combination of a Laspeyres volume index for extrapolation and a Paasche price index for deflation is applied. Important assumptions are fixed input/output ratio's (the quantity indices for production are also used to compile intermediate consumption in constant prices) and the absence of price discrimination amongst the different producers of a commodity.

For the purpose of chain-linking and seasonal adjusted series CBS applies the recommended annual overlap method. This technique is used for calculating quarter-on-quarter growth rates, which are considered the most important figures for business cycle analysis.

QNA are based on a large variety of data sources, usually compiled by different departments of CBS. In general the quantity and quality of quarterly information is inferior to annual information. Source statistics, in practice usually based on reduced sample surveys, yield many different types of information. They can refer to physical output quantities, but most common are data on sales and turnover. For some industries input data are used as indicators for output. Examples of external sources are VAT records, business accounts of large enterprises or quarterly government accounts. In some cases, notably healthcare services, volume estimates are derived from modelling techniques.

Source data is mostly available as levels in nominal values or as index numbers in prices, volume or values.

1.6 Seasonal adjustment and working day correction

Seasonally adjusted series are available for a large number of variables including output, expenditure and income components. Adjustments are made with the Census X-12-ARIMA program which incorporates a number of pre-adjustments and the possibility of setting more options separately. The pre-adjustments applied are corrections calendar and working days effects, and corrections concerning the treatment of outliers. Seasonally adjusted series are revised and updated each quarter.

1.7 Additional information

The most exhaustive information on concepts, sources, classification and methods is available from the *Gross National Income Inventory, 2001, The Netherlands*, published in 2006. In addition, *National Accounts of the Netherlands, Revision 2001* provides a detailed account of conceptual and methodological improvements that were recently introduced and their effect on the national accounts estimates for 2001, while the annual publication *National Accounts of the Netherlands* contains summary metadata on concepts, scope and classifications (available in both Dutch and English). These publications and key data are all available from the CBS-website:

<http://www.cbs.nl/nl-NL/menu/themas/macro-economie/cijfers/default.htm>

The following references also provide links to specific QNA data. This is a link to seasonally adjusted series:

<http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA=37595&D1=a&D2=1,1&D3=100-103&VW=T>

This is a link to price, volume and value changes:

<http://statline.cbs.nl/StatWeb/selection/?DM=SLNL&PA=03751&VW=T>

This is a link to values in current and constant prices:

<http://statline.cbs.nl/StatWeb/selection/?DM=SLNL&PA=37595&VW=T>

2. Publication timetable, revisions policy and dissemination of QNA

2.1 Release policy

The timeliness of the quarterly national accounts (45 days after the end of the reference quarter for the flash estimates and 90 days after the end of the quarter for the regular estimates) meets international requirements (of T+70 days). The publication of the flash estimates coincides with the European-wide coordinated release dates of the QNA.

The revisions cycle for both quarterly and annual national accounts is clearly indicated in the CBS publication calendar and follows a very regular pattern each year. The official release calendar is available from the CBS-website, about one year in advance.

The quarterly data are provisional when first released. The data become final when they are adjusted to the final annual accounts. This varies from 32 months after the first release for a fourth quarter to 41 months after the first release for a first quarter. The revision policy is explained in the annual national accounts publication and a brief explanation is provided in each press release.

A total of five versions of the annual national accounts are published for each reference year. The first annual estimate for year t is simply obtained by adding the regular estimates of the first 3 quarters and the flash estimate of the fourth quarter (published by mid February, year $t+1$). The second annual estimate is obtained by addition of the four regular quarters (end of March, year $t+1$). The third annual estimate is also based on the quarterly estimates, but supplemented with first annual data notably on government and agriculture (July, year $t+1$). These estimates are referred to as the Provisional annual estimates. Fourthly, the Revised provisional annual estimates are released about one year and seven months after the reference year (July, year $t+2$). Lastly, the Final annual estimates are released about two years and seven months after the reference year (July, $t+3$). These are based on the full set of production statistics.

The regular estimates of the QNA are fully consistent with the Quarterly Sector Accounts and the Short-term Public Finance Statistics (STPFS). The STPFS is published with a delay of about 115 days after the reference quarter. The publication of the newly developed QSA has only started at the beginning of 2008. A release calendar has not yet been established, but publication of the regular estimates will be harmonized with the STPFS. The QNA and the Labour Accounts are consistent as well and released on the same day.

2.2 Contents published

Data on GDP and its main components are disseminated in millions of euros at current and constant prices (at average prices of the previous year). In addition value changes, volume changes and prices changes vis-à-vis the same quarter of $t-1$ are published. Breakdowns are available by expenditure category, economic activity and cost components.

The breakdown by major expenditure category includes consumption expenditure by households and by government, gross fixed capital formation by government and by corporations, changes in stocks, and exports and imports of goods and services. Furthermore, final consumption by households is broken down by type of goods and services. Final consumption by government is split into an individual and a collective part. Data on gross fixed capital formation is broken down by type of capital good and by economic activity of destination, while data on imports and exports are broken down by groups of products (according to the CPA '93). The breakdowns are disseminated both in current and in constant prices, including value and volume indices vis-à-vis the same quarter of $t-1$.

The breakdown by economic activity comprises of data on gross value added. The breakdowns are disseminated both in current and in constant prices, including value, volume and price indices. The following main activities are distinguished:

- 1) Agriculture, forestry and fishing
- 2) Mining and quarrying
- 3) Manufacturing
 - 3.1) Manufacture of food product, beverages and tobacco
 - 3.2) Manufacture of textile and leather products
 - 3.3) Manufacture of paper products, publishing and printing
 - 3.4) Manufacture of petroleum products
 - 3.5) Manufacture of basic chemicals and man-made fibers
 - 3.6) Manufacture of chemical products
 - 3.7) Manufacture of rubber and plastic products
 - 3.8) Manufacture of basic metals and fabricated metal products
 - 3.9) Manufacture of machinery and equipment n.e.c.
 - 3.10) Manufacture of electrical and optical equipment
 - 3.11) Manufacture of transport equipment
 - 3.12) Other manufacturing
- 4) Electricity, gas and water supply
- 5) Construction
- 6) Trade, hotels, restaurants and repair
 - 6.1) Trade and repair
 - 6.2) Hotels and restaurants
- 7) Transport, storage and communication
 - 7.1) Transport and supporting transport services
 - 7.2) Post and telecommunications
- 8) Financial and business services
 - 8.1) Financial intermediation
 - 8.2) Real estate activities
 - 8.3) Employment agencies
 - 8.4) Other business services
- 9) Government
- 10) Care and other services

The breakdown of cost components of value added includes compensation of employees, consumption of fixed capital, taxes on production and imports, subsidies and net operating surplus. The breakdowns are disseminated both in current and in constant prices, including value and volume indices.

All quarterly tables of the ESA95 questionnaire are submitted at T+45 days and updated at T+90 days.

Tables according to the ESA95 questionnaire:

Table 0101 - Gross value added at basic prices and gross domestic product at market prices

Table 0102 - GDP identity from the expenditure side

Table 0103 - GDP identity from the income side

Table 0107 - Disposable income, saving, net lending / borrowing

Table 0109 - Real disposable income

Table 0110 - Population and employment

Table 0111 - Employment by industry

Table 0117 - Final consumption expenditure of households by durability

Table 0120 - Exports of goods (fob) and services by Member States of the EU / third countries.

Table 0121 - Imports of goods (fob) and services by Member States of the EU/third countries

Seasonally adjusted data are made available at a slightly higher level of aggregation. For the seasonal adjustment procedure chain linked series are compiled by the “Annual Overlap” procedure with 2000 as the reference year. The Census X-12-ARIMA procedure is applied to this series to get seasonally adjusted figures (see section 3.3.3 on seasonal adjustments).

2.3 Special transmissions

Special data transmissions are submitted to the OECD (the ESA95 tables and historical series), the Central Planning Bureau of the Netherlands (historical series, disaggregation of international trade in goods, and computation of seasonal adjustment) and the Central Bank (historical series and gross fixed capital formation by destination and type, computation of seasonal adjustment).

2.4 Policy for metadata

The most exhaustive information on concepts, sources, classification and methods is available from the *Gross National Income Inventory, 2001, The Netherlands*, published in 2006. In addition, *National Accounts of the Netherlands, Revision 2001* provides a detailed account of conceptual and methodological improvements that were recently introduced and their effect on the national accounts estimates for 2001, while the annual publication *National Accounts of the Netherlands* contains summary metadata on concepts, scope and classifications (available in both Dutch and English). These publications are all available from the CBS-website:

<http://www.cbs.nl/nl-NL/menu/themas/macro-economic/cijfers/default.htm>

Occasional papers on various national accounting issues that have been prepared by staff of the National Accounts Department are available on the CBS website. A list of these papers is also shown in the annual national accounts publication:

<http://www.cbs.nl/nl-NL/menu/themas/macro-economic/methoden/onderzoeksreeksen/methoden-en-onderzoek/default.htm>

3. Overall QNA compilation approach

3.1 Overall compilation approach

Classifications

As with the compilation of ANA, supply and use tables (SUT) are the balancing framework in compiling QNA. These tables are simultaneously compiled both in current prices and in constant prices (i.e. in average prices of the previous year). For the quarterly supply and use tables (as well as for the provisional annual accounts) about 200 categories of goods and services and 120 branches of industries are distinguished. Concerning the final annual national accounts compilation takes place at a more detailed level of about 800 categories of goods and services and about 250 industries. The classification of commodities is generally based on the central product classification (CPA), while the columns (industries) are classified according to CBS' 1993 Standard Industry Classification (SBI'93) which is linked to the NACE.

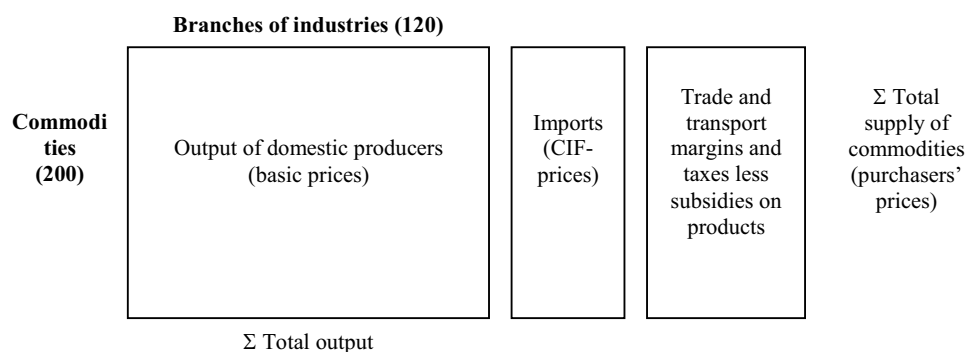
Supply and use framework

Valuation complicates the framework somewhat as the output of industries is denominated in basic prices while the use of commodities is expressed in purchasers' prices. The bridge between the valuation of both tables is included in the supply table, through addition of trade and transport margins and taxes and subsidies on products. Scheme 1 below shows the elementary structure of the Dutch supply table. For the sake of simplicity, only one column is distinguished for transport margins, trade margins, taxes on products and subsidies on products. In practice, the SUT has about twenty valuation layers for taxes and subsidies on products, while margins are split up in transport margins, wholesale trade and retail trade margins. Wholesale margins are further divided into margins on exports and other wholesale margins.

Registration of trade and transport margins

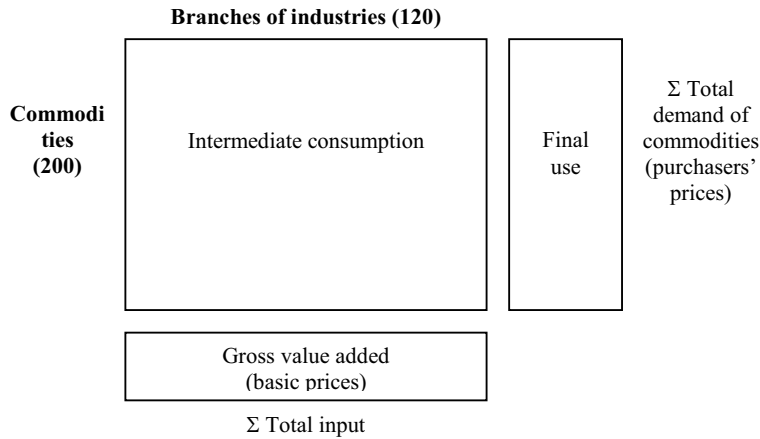
Trade and transport margins are registered twice in the supply table. First, as output of, mainly, trade and transport industries. Secondly, as a layer in the valuation bridge between supply at basic prices and use at purchasers' prices. In the columns of trade and transport margins the total is included with a minus sign to correct for this double counting, which implies that both the row totals of the product groups trade and transport margins and the column totals are equal to zero.

Scheme 1: Supply table



The structure of the Dutch use table is given in scheme 2. The table is denominated in purchasers' prices. The final use categories comprise of private consumption expenditure, government consumption expenditure, gross fixed capital formation, changes in stocks and export of goods and services, divided into exports to EU and non-EU and re-exports to EU and non-EU.

Scheme 2: Use table



Treatment of VAT

In the Dutch system only non-deductible VAT is recorded: VAT on purchases by households, VAT on fixed capital formation and VAT by VAT-exempted enterprises. VAT-exempted enterprises do not charge VAT when they sell their products. This implies that they can not settle paid VAT on their purchases of intermediate and capital goods with VAT received on their sales. For this reason VAT paid by VAT-exempted enterprises is considered a final levy. In the use table this appears on the row non-deductible VAT in the column of the VAT-exempted industries.

Imputed VAT is calculated by applying the statutory percentages to the relevant goods and services transactions. Imputed VAT differs from VAT actually paid to the government. This is due to acquittals, bad debts, fines, regulations for small entrepreneurs and VAT evasion. The difference between imputed and paid VAT is registered in a dummy column and not distributed over industries.

General compilation procedure

The first step is to fill the supply and use table with basic data on the branches of industries. Usually only output (or turnover) is available on a quarterly basis. The volume change in output is used to calculate the volume change in intermediate consumption of the branches of industry (in other words: a production function with fixed coefficients is assumed). Price indices are used to obtain value estimates by commodity. The next step is to add data on household and government consumption expenditure, fixed capital formation, exports and imports of goods and services and, if available, data or estimates on the change in stocks and work in progress. The result is an unbalanced SUT in constant and current prices (with statistical discrepancies between the supply and use of commodities). Total output of industries and total input of industries is automatically balanced as operating surplus is used as a residual item. In a last step the differences in the supply and use of commodities are eliminated in a process of simultaneous balancing: data in current and constant prices are adjusted in a single process.

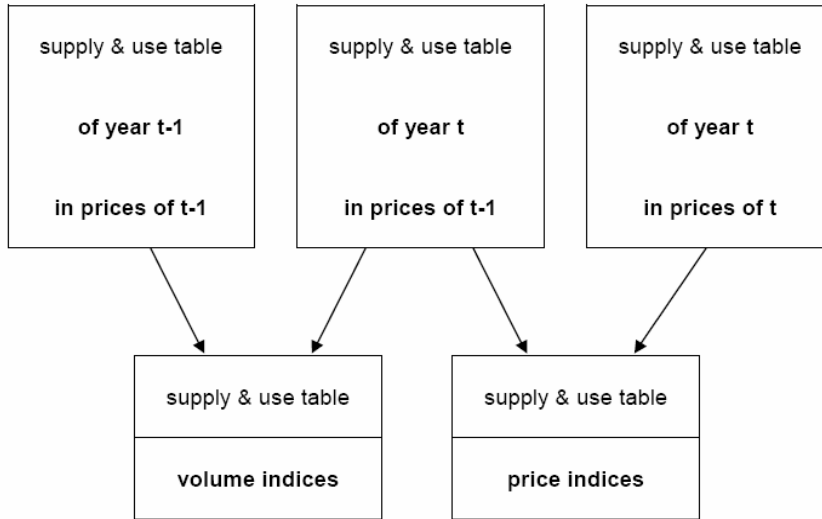
Besides the SUT, which serves as a framework for the integration of statistical data on goods and services, two other integration frameworks are utilized. These are the Quarterly Sector Accounts and the Labour Accounts. In the Dutch system of national accounts these three frameworks are directly connected to each other and are mutually consistent.

3.2 Balancing, benchmarking and other reconciliation procedures

3.2.1 Quarterly GDP balancing procedure

The supply and use of commodities is balanced in the framework of the SUT. For each commodity supply data on production and imports is confronted with data on intermediate and final use. The initial statistical discrepancies are removed in the balancing process, so that in the end for each commodity total supply equals total use. The balancing process takes place simultaneously in both current and constant prices.

Scheme 2 Simultaneous balancing of a supply and use table



It goes without saying that the weakest data are most likely to be adjusted in the balancing process. In many cases this means that changes in inventories are adjusted, given the lack of quarterly information. But in other cases imports and/or exports are adjusted, especially in the case of services or when substantial discrepancies occur between production statistics and international trade data. Sometimes production (output) is adjusted, for example in the case of health services where only quarterly data on government outlays is available.

For each variable (cell) in the Dutch SUT-framework a total of 3 values and 3 indices are instantly available (this is called the 6-pack). Values are expressed in current prices, constant prices and (average) constant prices of the previous year, with corresponding value, volume and price indices. The values and indices are continuously monitored during the balancing process. The data are subject to a number of plausibility checks (rules of thumb); changes in inventories cannot be only positive or only negative for longer periods of time, often a relation exists between producer prices and export prices. Import of goods and re-exports should be more or less in balance. Extreme volume and price changes warrant explanation. For the industries the input/output ratio's are continuously monitored. A set of process tables is also used to evaluate the results of the integration process against outcomes of the source data, notably for manufacturing industries and the international trade in goods.

Initial discrepancies may vary per commodity from a few million euros for agricultural produce to more than 1 billion euros for some fuels (about 0,75 percent of GDP volume change). These large initial discrepancies often occur in the absence of basic estimates on changes in stocks. By adding these changes in stocks, through estimation, the initial discrepancies are usually substantially reduced.

A consistent SUT is obtained after all the commodities (rows) have been balanced. The industries (columns) balance automatically as the operating surplus is the residual item. The consistent SUT yields identical macro-aggregates for the three approaches to GDP; i.e. the production approach, the expenditure approach and the income approach. The GDP estimates in the Netherlands are in fact the result of the combined production and expenditure approach. The income approach is not independently applied as of lack of data on operating surplus.

3.2.2 Benchmarking of QNA and ANA

Benchmarking of the 4 quarters of t-1 takes place as soon as the annual estimates of t-1 are finalized (end of March year t+1). The four quarters are adjusted to the annual estimates of t-1 on a proportional basis (each cell in the quarterly SUTs is proportionally scaled to its annual total). Because the quarters of t-1 are benchmarked, the quarters of t are proportionally adjusted as well.

These adjusted quarters of t are then added to obtain the basis for the third annual estimate for year t. For a number of industries, notably the government and the agricultural activities, new information is added and a new balancing process is started. After this third annual estimate of year t is finalized (at the end of May) the 4 quarters are again adjusted (each cell proportionally) to the annual totals (June). These adjusted quarters of t, with average constant prices of t, subsequently serve as the basis for t+1⁴.

The number of working days does not affect the benchmarking process, as the reference in the QNA is always the corresponding quarter of the previous year (year on year method). Only the seasonal adjusted data and the corresponding quarter on quarter GDP-changes (quarter on quarter method), as well as its components, are affected.

3.2.3 Other reconciliation(s) of QNA different from balancing and benchmarking

The SUT-data are subject to further plausibility checks with the Labour Accounts, especially changes in labour volume, labour income quote and labour productivity by branches of industry. Apparent inconsistencies are removed. They mostly lead to output adjustments in the SUT.

The QNA and QSA are harmonized with respect to all taxes and subsidies on products and taxes and subsidies on production and imports. The data are collected from the Ministry of Finance.

The QNA results are finally adopted by the QSA. The final demand categories are directly used in the QSA and a cross-classification procedure is utilized to transform the industry data into the corresponding sectors.

3.2.4 Amount of estimation in various releases

Data on Agriculture is based on information collected by product boards, mostly volume data from auctions, harvest estimations, slaughtering and industry processing. Coverage is virtually complete. Fishing is derived from fish processing sales data. Forestry is fully estimated, but in seize only a small industry.

⁴ Benchmarking of the quarters means that for each cell in the SUT quarterly figures match annual totals. As a consequence of this procedure, however, small discrepancies appear in the commodity rows so that supply doesn't match demand on a quarterly basis. Through a process called simultaneous integration the rows of each quarter are balanced again; often through adjusting the weakest elements, such as changes in stock, or import and export of services.

Data on Mining and quarrying, Manufacturing, Electricity, gas and water supply, Transport, storage and communication and Construction are based on sales of the main product, with a 90 percent coverage of medium and large enterprises. Sales (output) of smaller entities is estimated, as well as the output of secondary products (based on the sales of the medium and large enterprises). Intermediate inputs are all estimated on the basis of the input/output ratios of the base quarter. The Dutch Energy Balances are used for physical measures of produced and used volumes of electricity and gas.

There is no quarterly information on Trade. Both the wholesale and retail trade margins are taken from the annual t-1 estimates and applied to actual supply or demand levels.

Data on financial services are derived from the Central Bank. The Monetary Financial Institutions (MFI's) are fully covered, the remainder (non-MFI banks) is estimated. The insurance corporations and pension funds are largely covered with 85 percent of the balance sheet total.

Data on Public administration and defence are virtually all based on government budgets and accounts, including those of the ministries, provinces, municipalities and waterboards. Estimates are made for a number of government bodies comprising only a small percentage of the government.

Production of healthcare is estimated from a combination of modelling and expenditure data. Virtually all expenses are accounted for by the government. The small part of private expenses is estimated on the basis of extrapolation.

Sales data on Hotels and restaurants, Employment agencies and Other business services are available on a quarterly basis. These data are transformed into output estimates and corresponding intermediate inputs on the basis of the input/output ratios of the base quarter. Enterprises with 50 working persons or more are fully covered, while smaller enterprises are covered through a stratified sample. For industries like the employment agencies the observation of the large enterprises leads to a substantial overall coverage, but industries like restaurants are characterized by a large number of small units.

Gross fixed capital formation is estimated on the basis of the origin of the investment goods, mostly from import, construction and manufacturing statistics. These data cover about 85 percent of total gross fixed capital formation. The remainder is estimated through extrapolation.

Private consumption expenditure is based on a variety of sources, among which monthly retail trade statistics, vehicle registrations and sales data on restaurants and bars, but estimations are made for some products, notably foodstuffs, which are purchased directly from suppliers as well as several services, of which financial services and healthcare services are the most important.

There is hardly any information on changes in stocks. These are often estimated residually in the commodity balance, taking into account specific patterns in previous periods.

With respect to the international trade in goods about 85 percent of total imports and exports are covered by observation (hard data). The remainder is imputed for non-response or non-coverage. The coverage of intra-EU trade is somewhat lower, about 75 percent, while the coverage of extra-EU trade is somewhat higher, about 95 percent.

The international trade in services is collected through a stratified survey based on direct information of the largest enterprises, a synthetic estimator for the small and medium sized enterprises (SME) and a trend estimator for the other units. The lower limit of the final assessment is based on 82 percent response for largest enterprises and 60 percent for the SME.

3.3 Volume estimates

3.3.1 General volume policy

Both the supply table and the use table are compiled in constant and current prices. Current price valuation means that the quantities of the quarter under review are expressed in the prices of the current quarter. Constant price valuation means that quantities of the quarter under review are expressed in average prices of the previous year.

In the Netherlands a combination of a Laspeyres volume index for extrapolation and a Paasche price index for deflation is applied. This combination of indices ensures consistency in both index formulas (a “full” breakdown of value changes in price changes and volume changes) and constant price level estimates (where constant price estimates of the total equals the constant price estimates of its components).

The Laspeyres volume index shows the extrapolation of a base period value with a quantity index number:

$$\sum Q_t P_0 = \sum Q_0 P_0 * \left(\frac{\sum P_0 Q_t}{\sum P_0 Q_0} \right),$$

The Paasche price index shows the deflation of a current period value with a price index:

$$\sum Q_t P_0 = \sum Q_t P_t / \left(\frac{\sum Q_t P_t}{\sum Q_t P_0} \right),$$

$$\sum Q_t P_t = \text{Current price value}$$

$$\sum Q_t P_0 = \text{Constant price value}$$

$$\sum Q_0 P_0 = \text{Base period value}$$

First the supply part is compiled in constant prices by multiplying the data in the base period with quantity indices. The row totals (domestic production per commodity) are converted to current prices with the use of price indices. It is assumed that there is no price discrimination amongst the different producers of a commodity. Thus a single price is used for each cell in the entire row, and so the average price of the row is equal to the price used for the subtotal. By addition of all the commodities produced by an industry the column totals also become available at current prices.

Due to the assumption of fixed input/output ratio's, the quantity indices are also used to compile intermediate consumption in constant prices in the use table. The row totals of intermediate consumption are also converted from constant prices to current prices with the information of prices

per commodity. Here too, there is no price discrimination between users. As in the supply table, the column subtotals (intermediate consumption) become available at current prices.

The supply columns (margins, taxes and subsidies and imports) and the final expenditure columns (consumption of households and government, exports, gross fixed capital formation) are all compiled in both constant and current prices.

The value added components compensation of employees, value-added tax, taxes and subsidies on production are compiled in constant and current prices. Gross operating surplus in both constant and current prices is finally compiled as a residual item (where total output and total input of each column are equal).

The contributions of the macro-economic components to the growth of supply and demand of goods and services are calculated in a straightforward manner as their (absolute) volume change divided by the GDP in the base period. The growth of GDP and imports yield the supply growth of goods and services. This matches with the growth of the demand components; final consumption expenditure, gross fixed capital formation, changes in stocks and export of goods and services.

3.3.2 Chain-linking and seasonal adjustment

There are several methods for linking quarterly indices to a chained index that is consistent with the independently estimated annual index. In the Netherlands the recommended annual overlap method is applied. As the quarterly data are consistent with the annual totals, benchmarking is not needed. This technique is used for calculating quarter-on-quarter growth rates. These growth rates are considered the most important figures for business cycle analysis.

A direct approach is used for the aggregation of seasonally adjusted data. Concerning the original data consistency exists between GDP and its components in both current prices and volumes (previous year's prices, unchained). But this consistency does not apply for the seasonally adjusted data.

Seasonally adjusted series are available for a large number of variables including breakdowns of expenditure categories, total value added (in basic prices) and its components. For a complete overview please refer to Statline:

<http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA=37595&D1=a&D2=1,I&D3=100-103&VW=T>

3.3.3 Seasonal adjustment and working day correction

To be able to compare quarterly growth rates with each other differences between the quarters that may have an effect on the growth have to be taken into account. In practice, seasonal and calendar effects are taken into account. The basic principle of seasonal correction is estimating certain effects with the aid of statistical techniques on the basis of times series analysis. For this reason seasonal corrections can only be calculated if sufficiently long time series are available, usually at least 28 quarters.

To estimate seasonal or calendar effects the progressive average is used: the average value of a variable in a given number of past quarters. The exact length of the period taken into account differs per effect.

Seasonal and calendar corrections are not calculated manually but with the aid of specially developed computer programs. The Netherlands uses Census X-12-ARIMA (version 0.2.8). This program incorporates pre-adjustments and provides the possibilities of setting more options separately.

Pre-adjustments

Preliminary correction is applied for calendar effects. Calendar effects are caused by differences in the numbers and types of days between quarters. The number of calendar days may differ between quarters, sometimes even between corresponding quarters (leap days) and according to a regular pattern between successive quarters. In addition, there is often a difference in the number of working days.

The consequences of one working day more or less are quite complicated. One working day more often implies one non-working day less (in the comparison of corresponding quarters). But in some sectors work continues on non-working days (police and public transport, for example) and in others production is even highest on non-working days: amusement parks, for example. The total effect of one working day more or less is therefore the result of many positive and negative adjustments.

One major problem is that in the Netherlands, as in most countries, there is no information on the actual number of working days in a quarter. Holiday leave is not taken evenly throughout the year, and the holiday pattern may change from year to year. In the Netherlands, for example, there is the compulsory staggering of school holidays. Moreover in weeks with one or two national holidays, many people take three or four days leave to have the whole week off. It makes an essential difference, for example, whether Christmas and the New Year are weekdays or fall in the weekend.

The method used standardises to a certain extent the number of working days per quarter. If there are more working days in the quarter concerned, the preliminary corrections are applied and the value added is diminished accordingly (and vice versa). The total effect, averaged over a relatively long period, is about 0.2 percent point per working day.

A third preliminary correction concerns the treatment of the outliers. The used method incorporates the removal of strongly deviating values.

Seasonal correction

After these preliminary corrections, the actual seasonal correction is applied.

The trend cycle

With Census X-12-ARIMA it is also possible to calculate a trend cycle in which the effects of incidental factors are almost completely removed. The course of the trend cycle is also clearly more stable. Turning points or changes in rates of economic growth are therefore less easy to detect. If the effect of incidental factors is only small the annual trend cycle may therefore be a reasonable indicator for the ultimate annual growth.

4. GDP and components: the production approach

4.1 Gross value added, including industry breakdowns

4.1.1 Source data

The compilation of QNA and the estimation of the aggregates involve the use of a lot of statistical information usually referred to as *source statistics*. Most data sources are usually specific statistics compiled by several departments of CBS. Some data are provided by other institutions like the Central Bank of the Netherlands (DNB) and branch organisations (agriculture). Obviously, the more complete the set of source statistics and the higher its quality, the more reliable the resulting set of QNA aggregates will be. In general the quantity and quality of quarterly information is inferior to annual information.

Characteristics of QNA source statistics often differ from those of the annual accounts since the aim of quarterly accounts is essentially to capture and describe short-term economic movements. In practice, reduced sample surveys are used for short-term surveys. Generally all firms with more than 50 employees are fully covered, but only a (stratified) sample is included of firms with fewer employees. In addition, surveys are not (yet) available for all types of industries, in particular for care and other service activities. After data collection, the sample surveys require a grossing-up procedure, i.e. which means that the sample based results are adjusted to cover the whole population.

Depending on whether estimates are based on data on enterprises or goods and services, statistics are ‘institutional’ or ‘functional’. An example of the latter is the data related to agriculture.

Source statistics supply many types of information. For example, in compiling GDP according to the production approach, the amount or the quantity of output, expressed in physical terms, represent the basic information. One can refer to production of crops, milk and eggs in agriculture, produced quantities of gas and petroleum in mining and the number of produced cars in manufacturing. In construction, manufacturing and business service activities, sales and turnover are the most common data available. Also employment and purchases of input data are sometimes used as indicators for the output of some industries. Final consumption of households is derived from retail trade statistics, and final consumption of general government is derived from administrative data on intermediate consumption and labour statistics on the wages and salaries of civil servants. For specific items, particular sources can be used. An example is the amount of productive hours per employee as an additional indicator for the output of construction.

When the aim of surveys does not meet QNA needs, e.g. price statistics, quarterly information is extracted from these sources. In addition to data collected by CBS itself, raw administrative data (data that is not translated into a specific statistic) from external sources can be used for the QNA. Examples are VAT records, the (quarterly) business accounts of some large enterprises, reports by supervisory bodies on banking, private insurance and telecom or quarterly accounts of the central government and social insurance bodies. Furthermore articles in newspapers and magazines may provide statistical information on developments or specific events like big investment projects. This information can be used to complement available data or to check their plausibility.

Source statistics are usually available as levels in nominal values (for example household surveys, balance of payments data, surveys of sales and turnovers) or as index numbers in prices, volume or values (business indices, industrial production index, consumer price index etc.).

In some cases the quarterly figures are not based on surveys but are derived using extrapolation and projection techniques (modelling). These methods are used when source statistics are not available at the desired frequency, not available at all, or do not meet the QNA requirements of timeliness. In this respect modelling techniques may yield actual estimates based on historical data.

Source statistics are often adjusted in order to fulfil the requirements of the national accounts. These adjustments relate to definitional issues, completeness, comparability and plausibility. When the source data meet the national accounts requirements they are fit to be entered into the supply and use framework. This applies to all the output and cost data of industries, the final demand categories as well as the components of value added (except operating surplus which is residually derived)

1. Consistency of definitions: source statistics should be brought in line with the concepts and definitions of the national accounts. For example, source statistics usually give sales (and purchases) while the national accounts require production (and intermediate consumption), taking into account the changes in stocks.
2. Compatibility of the nomenclatures or details: often source data are not directly compatible with the classifications (taxonomy) of the supply and use tables. The classifications and data from source statistics usually have to be mapped to the taxonomies of the supply and use table (using distribution keys). These keys are normally extracted from the supply and use table of the reference period.
3. Completeness for cut-off statistics (or the hidden economy): data should be representative for the whole economy. Since the national accounts require complete estimates for all branches of industries, data from surveys have to be grossed-up for small firms (which is usually done in proportion to the number of employees). Occasionally estimates are made for hidden transactions (like allotment gardens in agriculture).
4. Continuity of figures over time (comparability in time): data should be checked on continuity. Do quarter-on-quarter changes in the data represent *real growth rates* or are they perhaps partly caused by changes in the classification of statistical units? For example, source statistics usually provide actual data. However, if an establishment is classified into another industry because of a mistake in the past, the national accounts will leave this establishment where it used to be until the next revision (in contrast to the source statistics). If not, growth rates per industry would not reflect a *real* change.
5. Plausibility of figures: data are further subjected to plausibility checks. For example, to check labour productivity quarter-on-quarter changes of total output can be compared with changes in labour input or the output/input ratio of an industry can be verified if source data for the output as well as input are available.

4.1.2 Agriculture, forestry and fishing

The majority of agricultural products is sold to the foodprocessing industry. The estimation of agricultural output is thus closely linked to the purchases of the foodprocessing industries. These purchases cover:

- The supply of animals to slaughterhouses,
- The supply of milk to the dairy industry,
- The supply of raw materials to flour factories, the fodder industry and breweries (grain), the starch industry and potato factories (potatoes), the sugar industry (sugar beet) and the fruit and vegetable processing industry (fruit and vegetables).

In addition, the foodprocessing industries may sometimes sell their output to agricultural units, most notably is the case of the fodder industry which sell their produce to farmers.

Sources

The two main sources for estimating agricultural output are the *Business Information Network* of the *Agricultural Economics Research Institute* (LEI) and the *Product Boards* (Productschappen). These bodies collect a great deal of functional (product) information on the output and industrial processing of agricultural products and foodstuffs. They are responsible for applying EU product regulations and advising the government on EU agricultural policy. Besides these two main sources of information, a number of other data sources are used:

- The *Agriculture Survey* plays an important role in estimating agricultural output. This comprehensive survey is conducted by the CBS in conjunction with the Ministry of Agriculture, Nature and Food Quality and covers approximately 115,000 agricultural units, i.e. all units operating at any significant level of agricultural activity. The survey covers cultivated areas, numbers of livestock, the workforce and principal and secondary activities. It provides a useful register for such sampling surveys as the CBS crop estimates and the structural survey conducted by the Agricultural Economics Research Institute.
- The *CBS crop estimates* are an important source for calculating output of a number of arable products. An expert working group, including representatives of CBS and the Ministry of Agriculture, Nature and Food Quality, estimates the area harvested (hectares) and yield (tonnes per hectare) on the basis of approximately 66,000 reports. These results are then extrapolated on the basis of the Agricultural Survey.
- *Additional Sample Survey on Agriculture* (pigs and cattle): There are a few moments throughout the year where additional surveys are held: in August, November and December. These surveys collect information on pigs (August and December) and cattle (November). This survey is used to derive seasonal structures.
- The *Dairy Products Statistics* compiled on the basis of weekly reports by the CBS in conjunction with the Dutch Dairy Board contain comprehensive data on milk deliveries to dairy factories, direct consumer supplies, farm butter and cheese production and poultry rearing both for sale and own consumption.
- The *Slaughter Statistics* cover the authorised slaughter of domestically reared cattle (including domestic pig slaughter). These are comprehensive monthly statistics (based on some 180 respondents). Data supplied by the Product Board for Poultry and Eggs are used to determine poultry slaughter
- *Agricultural Daily* (Agrarisch Dagblad).
- *Websites* of the above-mentioned bodies, corporations, and organizations.
- *Foreign trade statistics*

Methods

Some of the agricultural products, e.g. cereals, potatoes, vegetables, fruits and other farming products like sugar beets, have a longer production process than the period under review (quarter). Conceptually, the growth process should be seen as production. If the growth process lasts for example three quarters and the harvest takes place in the fourth quarter, the production should be registered as work in progress (additions to stock). In this way coherence between costs and output is maintained. However, as information on the growth process is not available, the information on estimated sales of these products is used as an indicator for output.

Cereals, potatoes, oil containing seeds: in terms of output value, cereals are the least important component of agriculture. This commodity is harvested in the third quarter, but costs are incurred throughout the year. The estimated sales and the costs incurred are used as an indicator for production. Estimations are made of the harvested area and the yield per hectare (using the CBS crop data). The prices used for deflation are obtained by using the price data of the LEI. In the same way changes for potatoes and (oil containing) seeds are estimated.

Sowing seed: for this commodity the CBS crop data are used. The prices used for deflation are obtained from price data of the LEI.

Other farming products: these products, predominantly sugar beets, are harvested in the third or fourth quarter. The sowing period is from March to April, the harvest takes place from September to December. An important purchaser of beet is the sugar industry. The costs are made throughout the year. Therefore the estimated sales and the costs incurred are used as an indicator for production.

Vegetables: vegetables are produced throughout the year. A distinction is made between vegetables intended for direct sale to consumers and those destined (by contract) for supermarkets or the

processing industries. Information on the production of vegetables is obtained from CBS crop estimates and the horticultural product boards. About sixty percent of the vegetables are exported (including re-exports) and therefore under supervision of the Quality Control Board. This board gives monthly updates on the export of fruit and vegetables.

Plants and flowers: the composition of this category varies throughout the year. To make an accurate estimation for the production of flowers a distinction is made between bulbs, cut flowers and products of tree nurseries. Bulbs are produced year-round, but approximately 50 percent are produced in the third quarter. Cut flowers are produced mainly in the second quarter. Other flowers are predominantly supplied in the first two quarters of the year.

Information on plants and flowers is taken from the Agricultural Daily. The organisation of auctions provides monthly data on the supply and turnover of flowers and plants. A value, volume and price index is derived from these sources. The LEI also has usable price data.

Fruit: fruit, mostly apples and pears, is grown on open land and in greenhouses and is supplied directly to consumers and to contractual buyers (such as supermarkets and the processing industries) throughout the year. The CBS crop estimates yield volume data about pears and apples. Again the price data of the LEI are used.

Other crops: most other crops are imported and used as input in the food processing industry. A few examples are coffee beans, cacao beans, raw tea and raw tobacco. The sources used for these products are the foreign trade statistics. The LEI price data are compared with the price data of the foreign trade statistics.

Cattle: this group only consists of live cattle and includes productive cows for the dairy industry and cattle for the meat industry. As prices of different categories of cattle differ greatly, a breakdown is necessary.

For the calculation of livestock production a number of sources are used; i.e. the slaughter statistics, the foreign trade statistics relating to live cattle (values and numbers) and the Agriculture Survey used to determine annual livestock variations (numbers).

The gross production of cattle = cattle for slaughtering + exports minus imports of live cattle + investment in productive livestock (dairy cows) + changes in livestock (normal cattle)

The Agriculture (May) Survey gives an estimate of cattle numbers. An additional sample survey is held in November. The Agriculture Survey is an integral survey used for quarterly estimations. The quarterly structure is obtained from historical data, the additional survey and data on the other components of production (see formula). Changes on the previous period are estimated for two types of cattle: investment (productive) cattle and normal cattle. The changes in livestock relate to the normal cattle.

Other sources for the estimation of changes in cattle numbers are the Agricultural Daily, information from the product board and the CBS slaughter data. The Netherlands also exports cattle. Data on the foreign trade, including price data are provided by the CBS international trade department, but also by the product board. The LEI data are also used to obtain price data. Agriculture specialists examine the prices during the process of commodity balancing.

Pigs: the method used for pigs is the same as the one used for cattle.

Other livestock: this group covers livestock other than cattle and pigs such as poultry, rabbits and horses. Poultry comprises both meat and egg production. The product boards for livestock, meat and eggs collect data on poultry supplied to slaughterhouses and eggs supplied to packaging factories.

Raw milk: raw milk production is estimated on the basis of the dairy product statistics, which are derived from the weekly reports by the CBS in conjunction with the Dairy Products Board. These contain data on milk deliveries to dairy factories, direct consumer supplies, farm butter and cheese production and poultry rearing both for sale and own consumption. Coverage is comprehensive and includes price information.

Agricultural services, gardening services, forestry: hardly any information is available on agricultural services, gardening services or forestry. Hourly wage rates per industry are used as an indication for the price. The volume change of agricultural services is assumed to correspond to the volume change of overall agricultural output.

Fishing: CBS compiles monthly data on the supply of fish in Dutch ports and on prices of fish. Data on the supply of fish are provided by the Ministry of Agriculture, Nature and Food Quality. Price information of the fish product board is used.

4.1.3 Mining and quarrying

Mining and quarrying consists of coal production, crude petroleum production, natural gas production, exploration activities, metal ore production and other mining and quarrying.

Sources and methods

Coal and metal ore: these commodities are not produced in the Netherlands. They are imported mainly for intermediate use in production processes. A small part is re-exported. Data on foreign trade flows are provided by the foreign trade statistics.

Crude petroleum production and natural gas production: a limited amount of information on the purchases of these commodities is available from the Nederlandse Aardolie Maatschappij (NAM), the Dutch petroleum company. From this information a production/consumption ratio is derived. Since NAM accounts for approximately two-thirds of crude petroleum and natural gas production in the Netherlands, this ratio is considered representative for the entire category. For the QNA the ratio of previous year is utilized.

The Netherlands' gas supplier (Gasterra) purchases all the natural gas produced by NAM and also imports some natural gas. Gasterra, classified in ISIC 11, supplies the natural gas to regional gas distributors (mainly large, electricity, industries classified in ISIC 40⁵) and to other countries. For the sake of a natural gas account, Gasterra data are enriched with survey data on these industries. The survey fully covers the largest categories of enterprises but only a sample of the medium size enterprises. The volume changes provided are used for the QNA. Producer prices are used as deflators.

Crude petroleum is mainly imported by oil refineries. The amount produced by NAM and other oil extracting firms is also bought by the oil refineries or sold abroad. The monthly survey among oil refineries and other oil extracting companies is used together with information from NAM to compile a crude petroleum account. The volume changes given in this account are used for the QNA. A price for deflation is obtained by using the producer price index (see section 4.1.4).

Both the natural gas account and the crude petroleum account constitute a part of the energy account.

Exploration activities: quantity information is not available on a quarterly basis. The estimate of the quarterly production of these activities is based on the annual accounts (divided into quarters) and the developments in oil and gas production.

⁵ ISIC 40 are industries that supply gas, electricity and water to the consumers.

Other mining and quarrying: this category, which includes peat and marl, is subject to the methodology described in section 4.1.4. Processing starts with the production statistics of large and medium sized enterprises, supplemented by the Light Industry Survey data for the smaller sized enterprises. Monthly price indices and, where available, production unit values are used for deflation.

4.1.4 Manufacturing

The manufacturing industry contributed about 14 percent to GDP in 2007. As explained in chapter 2, the assumption of a production function with fixed coefficients necessitates a classification of production processes with input structures that are fairly homogeneous. Consequently, the supply and use table distinguishes about 40 manufacturing industries and 100 manufacturing commodities.

Sources

For each industry the quarterly changes in the value of production is estimated, both at constant and current prices. In virtually all cases source data are collected by CBS. The data may measure the volume changes in production both directly (e.g. number of produced cars) or indirectly (deflated turnover data). The following five types of information are distinguished:

- 1) Quantities produced (e.g. cars and fuel).
- 2) Turnover data: turnover data are given by the industrial turnover index which shows the monthly value of own products and services invoiced (excluding goods purchased for resale in the same condition as received and excluding VAT, excise-duties and other taxes). Turnover is divided into domestic sales and exports. The main source is a statistical survey.
- 3) Use of raw materials: for a few industries input information is used as an indicator for output (e.g. starch potatoes and cacao beans).
- 4) Information about hours worked.
- 5) Industrial output price indices: a statistical survey is used to obtain domestic output prices, export prices and import prices (whereby VAT and excise duties are excluded). These prices correspond to the price set at the moment of delivery. Price indices are used to deflate values of production and turnover.

Methods

The above mentioned types of information are all used for the compilation of the production index by branch of industry (volume index). The main source of this index is a statistical survey. However, for some classes of industry data are directly received from enterprises or institutions (about 8 percent), in particular in the food industry.

The production index aims to show the monthly change of gross value added at basic prices. Depending on the type of activity, enterprises report gross production, turnover, changes in stocks, physical quantities of products, energy consumption, and use of raw materials or hours worked. As far as turnover and value of stocks are used for the calculation of the index, industrial output price indices are used for deflation.

The industrial production index is the main source used for the QNA. This quantity index is used to calculate the constant price value in the current year. Industrial output price indices are used to calculate the current price values. However, there are a few exceptions. These are described below:

Manufacturing of food products, beverages and tobacco: about 75 percent of activities in this group are based on deflated turnover data. For the remainder physical quantities are used to estimate a volume index. A few examples are information on the number of animals delivered to the slaughter industries (e.g. pigs and cattle), information on raw milk supplied to the dairy industry, and output of

physical quantities of dairy products by the dairy industry (e.g. tons of butter, cheese and litres of consumption milk).

Manufacturing of textile and leather products: in addition to the turnover data of the industries, retail trade information on clothing is used.

Manufacturing of paper products; publishing and printing: to deflate the turnover data a combination of producers' prices and consumer prices is used.

Manufacturing of petroleum products: quantities from the energy accounts are used for the estimation of a volume index. The industrial output price indices are used to calculate the current price values.

Manufacturing of basic metals, metal products, machinery and equipment n.e.c.: estimation of these activities is based on deflated turnover data and on information on hours worked.

Manufacturing of electrical and optical equipment: for medical instruments and optical equipment the volume index is estimated on the basis of a three monthly moving average of turnover data. Normally production of this kind of equipment (machines) takes a few months. As turnover shows peaks on delivery moments, a moving average is used to weaken fluctuations.

Manufacturing of transport equipment: a combination of three sources is used for these activities. Deflated turnover data, information on hours worked (e.g. production of ships and aircrafts) and on quantities produced (e.g. cars and trucks).

4.1.5 Production and distribution of electricity, gas and water

The sources mentioned in section 4.1.3 (mining and quarrying) are also used for these industries. In addition to information on natural gas and crude petroleum, the energy accounts also include information on the energy and water supply corporations. Constant-price analysis of output, intermediate consumption and value added is based on the monthly output price index and, where available, unit values of production. Some electricity is traded internationally. Data on these foreign trade flows are provided by the foreign trade statistics.

4.1.6 Construction

In the QNA 6 branches of construction industries are distinguished: site preparation, construction of dwellings and other buildings, construction of civil engineering works, installation activities, completion of construction activities and the rental of building machines. These industries produce 8 types of commodities: new dwellings, maintenance of dwellings, new buildings, maintenance of buildings, construction and installation of civil engineering, installations for dwellings, installations for buildings and other building activities.

Sources

Turnover index on construction: this monthly survey provides a turnover index for each of the 6 branches of construction industries. This index is derived from a comprehensive survey among the large companies (over 50 employees), a sample survey among the middle sized companies (10-49 employees) and the use of VAT data for the small companies (less than 10 employees).

Statistic Progress Buildings: this monthly statistic provides information, based on building permits, regarding the production of new buildings and dwellings. All projects with total building costs of 50 thousand euros or more with a new building permit are reported to the CBS on a monthly basis. Building costs are valued exclusive of VAT. These reports contain information on the location, type of building (building or dwelling), kind of building activities, building costs, content, floor area and estimated building time. This information is used to calculate on a monthly basis the different stages of the building process to monitor the progress.

Production price indices of dwellings and buildings: in order to obtain a building permit, information must be provided to the local authorities, e.g. building costs, size and estimated building time. This information is used to construct a production price indices for newly built dwellings and buildings. Both are constructed through a hedonic method. The main explanatory variables used are volume, number of dwellings in the plan, type of principal, rental or ownership and type of soil. The index does not cover site preparation, repair and maintenance.

The Consumer Price Index (CPI) on the maintenance and repair of dwellings: this monthly index is used to deflate the maintenance of dwellings and buildings.

Input price index of civil engineering works: this index is compiled for sewerage construction, road construction with brick paving and asphalt/concrete paving, mechanical excavation for road construction and maintenance work on roads with asphalt/concrete paving. The index is provided four times a year, the figures refer to January, April, July and October.

Productive hours in construction of dwellings and other buildings: this statistic provides monthly data on the number of productive hours per employee. The data only concern the construction of dwellings and other buildings. Data on unproductive hours and the loss of working hours due to frost and precipitation are also utilized.

Production volume of building materials (e.g. wood and concrete): The supply of building materials is mainly used for construction activities. Furthermore, the changes in construction production volume corresponds to the changes in the use of these materials.

Methods

The turnover index provides the changes in current prices for each of the 6 branches of construction industries. For the construction of dwellings and other buildings the Statistic Progress Buildings is used to split the turnover into new dwellings and new buildings.

To deflate the turnover per commodity use is made of the production price for dwellings and buildings, the input price of civil engineering works and the CPI on maintenance and repair of dwellings. For the QNA, there is no information available for the deflation of the commodity other building activities and therefore an expert guess is used. The volume change of the supply of building materials is compared with the volume change of construction output in each industry. These volume changes should be in line over a longer period, but may differ within a quarter. The number of productive hours is used to check the plausibility of the volume change of the construction of dwellings and other buildings.

4.1.7 Wholesale and retail trade (including repairs)

The calculation of retail and wholesale margins is not based on direct surveys. Instead, the retail margins are directly linked to household consumption. Wholesale margins are linked to household consumption, gross capital formation, imports and exports and intermediate consumption. Every aggregate is linked with a certain tariff that is taken from the most recent annual data.

The calculation of the retail margins in the QNA is given as an example. For each commodity the volume changes in retail margins are equal to those of household consumption. Valuation of retail margins in current prices is such that the consumption price excluding the retail margins equals the price of supply disposable for domestic consumption.

These branches of industries include repair of motor vehicles, motorcycles and personal and household goods. Gross sales are available on a monthly basis. But this information gives a weak indication of value added changes since margins on these goods are not stable in time.

4.1.8 Hotels and restaurants

Data on turnover of hotels and restaurants are available on a monthly basis. Hotels and restaurants make up about threequarters of this industry. For the remaining units, mainly canteens, catering services and camping sites, quarterly data on turnover are available. The output is deflated with the CPI. Data on labour volume and compensation of employees is used to evaluate the output volume changes.

4.1.9 Transport, storage and communications

Sources and methods

The transport, storage and communications industries witness very heterogeneous cost structures. Consequently, a quite a few branches of industries are distinguished in the QNA. It is interesting to note that for some of these industries not just transport data are available, but also data on the traffic generated by this transport (i.e. data that are input related).

For railways, air transport and sea transport both transport data and traffic data are available, as well as sales indicators. In addition, subsidies to the railways are obtained from government records. The communication industry is covered by a large number of quantity indicators, such as numbers of phone calls, units of mail, telex messages, and so on. Rates data are used to compile price indices. In addition quarterly business reports of some big enterprises like KLM (Royal Dutch Airlines) and KPN (the major telecom operator in the Netherlands) are used.

For inland shipping companies the number of ton-kilometres is used as the main indicator of output. Price indices are derived from the Rhine freight rates and the average proceeds per ton-kilometre in tramp shipping.

Road-passenger transport includes taxi, coach car and group transport companies, as well as trams, bus and related companies. For the former groups of companies transport indicators and price indices are available; for the second group there are data on tickets (including subscriptions) sold, as well as on rates.

Output indicators of road freight transport are estimated from data supplied by the Economic Bureau of Road and Water Transport. These data are obtained from a periodic panel survey and refer both to prices and revenues.

The output of transport-related companies (storage companies, travel agencies, port companies, etc.) is measured from indirect data, viz. quantities of transferred goods and numbers of incoming sea-going vessels.

4.1.10 Financial and business services

Financial and business services consist of banking and insurance services, other financial (auxiliary) services, real estate activities, activities of employment agencies and other business services.

Banking

For the compilation of the regular quarter, data of the Central Bank of the Netherlands (DNB) are used. The dataset consists of regulatory reportings, which DNB collects from its responsibility of prudential supervisor, as well as of statistical supplements. Whilst data dissemination is obligatory for monetary financial institutions (in short MFI's) to attain a banking licence, the gathered set entails full coverage for these types of banks.

For non-MFI banks however, e.g. like building funds, communal credit associations, holdings and exchange dealers, registration with the central bank is not required. As a result, quarterly data are hardly available for these units. To overcome this information shortage, different statistical methods

are used. In most cases, annual data of the previous year are extrapolated under the constraints of secondary data sources.

After consolidating all different types of banks, the total levels of production, intermediate use and value added in current prices is determined. For each category the value index is calculated as the change in the current quarter compared to the reference quarter. In order to attain a value index in constant prices, a combined B/C volume method is in effect for the largest groups of commodities and services, i.e. for direct services like commissions and for FISIM.

For constructing the commission volume index, use is made of the MFI dataset. On the basis of this information, the total amount of commission can be decomposed down further into the different services on which commission fees apply. To each service, a specific volume indicator is attributed. Subsequently, the different indicators get weighted on the base of the proportions of their adjacent services in the total amount of commission fees. This results in a combined volume index.

For FISIM the volume index corresponds to the deflated changes in the stocks of loans and deposits in the current quarter vis-à-vis the reference quarter.

Special purpose entities

Special Purpose Entities (SPE's) are obliged to register themselves to DNB and submit data on their transactions on a monthly, annual or bi-annual basis, depending on their size. For the QNA, CBS uses international trade data from DNB on financial services, royalties and licences and 'other' services.

The output of SPE's consists of three items: banking services, licences and royalties, and rent of company buildings. On the input-side banking services (both foreign and domestic) are the main item supplemented by estimations of a large number of smaller cost items, including FISIM.

The difference between export and import of royalties and licences is considered as domestic production (of royalties and licences) by SPE's. The assumption is made that the imports are completely re-exported. Data on the import and export of financial and other services correspond to the input and output of the SPE's. Output for domestic use are estimated additions. A negative value added is not uncommon for SPE's.

Constant prices are based on changes in wages and salaries of the business services industries.

Insurance corporations and pension funds

DNB provides quarterly data on pension funds and insurance corporations through a so-called Direct Reporting System (DRA). The DRA is a cut-off sample survey which is annually benchmarked on basis of the available supervisory data. The audited supervisory data on insurance corporations and pension funds are available approximately 8 months after the accounting year. At CBS these data are converted into national accounting concepts and definitions.

Value measurement of the output of insurance services is calculated as operating costs plus the technical result. Theoretically this algorithm gives the same results as the ESA 95 algorithm for output measurement.

Volume measurement of the activities of pension funds and insurance companies on a quarterly basis is obtained by using price indices of insurance policies. The result of this method is occasionally confronted with volume indices of new insurance policies whenever timely available.

Business services

Estimates based on turnover data are available for the following branches: real estate activities, renting of movables, computer and related activities, research and development, legal and economic activities, architectural and engineering activities, advertising, activities of employment agencies and other

business activities. Supplementary labour information is used as a check. Value changes are deflated by using available price indices.

4.1.11 Care and other services

This industry comprises of health care and social work activities, sewage and refuse disposal services, recreational, cultural and sporting activities, private households with employed persons and other activities n.e.c. Due to a lack of short term information, trends in this industry are mostly extrapolated using annual forecasts and professional publications.

In health and social work activities, changes are based on data on public financing and since the first quarter of 2008 also on a newly developed model for volume estimates of production. Supplementary data on the number of employees and wages and salaries is also used. Since the introduction of a new health care system in 2006, almost 80% of the health and social work activities are covered by final consumption of general government. Therefore the estimation in current prices are mainly determined by the outlays of general government, but for the production estimates in constant prices the model for health care volume estimates mentioned above is used. Because of this, the estimation of total supply of health care is done in strong dialogue with the estimation of general government.

The volume estimates of the supply of health care are based on a linear regression model using the least-squares method. This model uses annual estimates in constant prices of production and labour input and for the current year also the quarterly labour input. The model consists of a function for labour productivity and a function which describes the development of total labour input in time. The four services for which the model is used are hospital services, psychiatric health services, care for the handicapped and care for the elderly (including nursing homes).

4.1.12 Government as an industry

Sources

Government is broken down into the usual categories of public administration and defence as well as subsidised education. Some government units are grouped into other industries like forestry, environmental services and health services. These, however, concern only a very small part of total government.

Direct information is used for a very substantial part of the government; namely the Dutch State, the Municipalities, Provinces, Waterboards and Social Security Funds. These sources cover compensation of employees, other taxes and subsidies on production, intermediate consumption expenditures, sales and social benefits in kind. However, the data on compensation of employees and social benefits in kind are replaced by Labour Accounts data, which covers all of the government.

The Labour Accounts gives quarterly information on jobs, labour input and compensation of employees, decomposed into wages and salaries and social contributions. These estimates are usually already used for the quarterly flash estimates. Labour input plays an important role in the constant price calculations.

Taxes and subsidies: data on taxes and subsidies are obtained from the Ministry of Finance. The cash receipts from the various taxes are transformed to the accrual recording basis used in National Accounts by applying a one month time-lag. In accordance with the current EU-regulations, the 90% criterion is fully respected. Almost all of these data are base on direct information.

Methods

The standard procedures are usually followed to estimate the various variables. Government production follows from the expenses, while government production less sales gives government consumption, which is decomposed into an individual and a collective part.

The calculation framework is given below.

<i>Plus</i>	Wages	(source: Labour Accounts)
<i>Plus</i>	Social contributions by employers	(source: Labour Accounts)
=	Compensation of employees	
<i>Plus</i>	Consumption of fixed capital	(PIM-method)
<i>Minus</i>	Other subsidies on production	(Ministry of Finance)
<i>Plus</i>	Other taxes on production	(Ministry of Finance)
=	Gross value added	
<i>Plus</i>	Intermediate consumption	(direct sources, see text)
=	Production (basic prices)	
<i>Minus</i>	Sales	(direct sources, see text)
=	Final production own consumption	
<i>Plus</i>	Social benefits in kind	(CVZ and direct sources)
=	Final consumption (of government)	

For deflation a number of sources is utilized. The expenses of the government, broken down by commodity, are deflated on the basis of the CPI (Consumer Price index). The deflation of the consumption of fixed capital is pursued on the basis of the PIM-method.

A volume index of labour costs is derived by deflating the wages and salaries by the average change in the hourly wage agreed in collective negotiations between employers and labour unions. In the Dutch circumstances this index, generally speaking, is a good approximation of a pure price index. However, additional research is pursued to assess whether a part of the ‘incidental’ wage change must be considered a pure price component. As a result, changes in the wages and salaries caused by higher education or working experience and by changes in the composition of the labour force are included in the volume index. So all quality changes are included in the volume index. Employers’ social contributions in constant prices are estimated by multiplying the value in the previous period by the volume index of wages and salaries.

The volume measure of other taxes and subsidies is calculated on the basis of the related variables. VAT, for example, is calculated on the basis of consumer expenses, investments and intermediate consumption. Finally, the volume measure of government production is calculated residually, just like the value measure.

4.2 FISIM

The calculation of FISIM is based on two main sources; interest rate statistics by DNB and stock estimates of Currency and deposits (AF.2) and Loans (AF.4). The interest rate statistics comprise of ‘interbank’ rates and various tariffs relating to lending and borrowing differentiated according to institutional (sub)-sector.

FISIM is calculated as the average of the opening and closing stocks of subcategories of Currency and deposits and Loans times the difference between the interest rates paid or received and the internal reference rate (or external reference rate for FISIM vis-à-vis the rest-of-the-world).

Volume measures of FISIM are derived by deflating the average of the opening and closing stocks of subcategories of Currency and deposits and Loans with the CPI.

Financial corporations are the only producer of FISIM. Households (in their role as consumers) pay FISIM as part of the final consumption expenditures and non-financial corporations (including household enterprises and owner-occupied dwellings) pay FISIM as part of intermediate consumption. The FISIM payments by industry are distributed according to their level of output.

4.3 Taxes less subsidies on products

The most important taxes on products, apart from VAT, are levies on gasoline, diesel, tobacco and alcoholic beverages, taxes on insurance policies, taxes on purchases of existing homes and several taxes related to environmental objectives. Subsidies on products relate mostly to subsidies on public transport, research and social and cultural activities.

Nominal values of taxes and subsidies on products are obtained from the tax department of the Ministry of Finance. These cash-based data are simply converted to a valuation on transaction basis by applying a one month delay. Thus for the first quarter the tax data for February to April are taken, assuming that tax payments are made after the transactions have taken place.

Volume data on taxes and subsidies on products are computed. The share of taxes or subsidies in total domestic purchases in the base year is applied to the current domestic purchases. Price changes are derived residually as the difference between value changes and volume changes.

Two exceptions should be noted. The value changes of duties on tobacco and taxes on the use of electricity and gas are computed in the same way as the volume data. The consumption of tobacco is quite stable during the year while consumption of gas shows a clear seasonal pattern. As a consequence, the computed value data for these categories are more line with the volume data. The cash-based tax data show a different pattern due to specific payment characteristics.

5. GDP components: the expenditure approach

5.1 Household final consumption

The monthly consumption index is the main source for final consumption by households in the QNA. This index aims to give a fast impression of household consumption expenditure on a macro-economic level and is an appropriate indicator for the short term business cycle. Although more details are published, the year-on-year value and volume changes of a number of main commodity categories are the essence of the consumption index. These categories are the consumption of food, beverages and tobacco, durable consumer goods, other goods, services and total and domestic consumption by households.

Sources

The monthly consumption index is based on the following sources:

Monthly turnover retail trade, hotels and restaurants, and hair- and beauty parlours: household consumption is directly linked to turnover of retail trade. Consumers buy most of their goods from retail outlets and, vice versa, retail outlets supply virtually all their goods to consumers. Information on retail trade becomes available five to six weeks after the end of a reporting month at 5-digit level of the Standard Business Classification.

Consumption of petrol and energy: CBS collects monthly data (physical quantities) on the consumption energy. Values are calculated with the use of price information. Turnover of petrol stations are used as an indication of consumption of petrol. A fixed ratio is applied to derived private and commercial consumption of petrol and energy.

Consumption of other services: consumption of services forms about half of total consumption expenditure. Some components of consumption of other services are available on a monthly or quarterly basis, but most data on services become only available during the compilation of the preliminary year, when the bulk of annual reports are published. Components not available monthly are calculated by extrapolation of quarterly data. Extrapolation yields acceptable results as the consumption of services is relatively less sensitive for business cycles.

International trade in services: information on tourist traffic is used to derive the consumption of foreigners (tourists) in the Netherlands and vice versa. The consumption of foreign tourists in the Netherlands is subtracted from domestic consumption and added to the export of services. The consumption of Dutch tourists abroad is added to both domestic consumption and import of services.

Other internal sources: data on dwellings/housing (information on stocks and rents) are used as an indicator of consumption on housing (rents) and related services. Consumption of services of owner-occupied dwellings is valued by applying the rents of similar dwellings. Data on population growth has an effect on consumption and is used as a plausibility check.

External sources: detailed product specification of supermarket turnover is used to distinguish between food and non-food and to make a specification of food sales. Vehicle sales to households is taken as an indicator for the consumption of passenger cars, small trucks, company cars and motor cycles.

Consumer price index: the consumer price index (CPI) is used as a deflator. The CPI is compiled on a monthly basis and covers most of the commodities distinguished in the QNA. A few relevant prices are missing in the CPI such as prices for medical services.

5.2 Government final consumption

Government production for own consumption is calculated as the sum of wages, social contributions by employers, consumption of fixed capital, taxes less subsidies on production, intermediate consumption less sales. Government final consumption is then calculated as government production for own consumption added by social benefits in kind. The calculation scheme is given in paragraph 4.1.12. The government production for own consumption is divided into two components: the individual government consumption and the collective government consumption. The government expenses for education, health, welfare and cultural activities are ascribed to the individual consumption. All other expenditures are regarded as collective consumption.

Sources

The Council of Social Insurance (CVZ) gives quarterly data on the social benefits in kind. These social benefits predominantly relate to compulsory social insurance, essentially under the Medical Health Insurance Fund Act (ZVW) and the Exceptional Medical Health Expenses Act (AWBZ). The two Acts contribute more than 85% to all expenditures on social benefits in kind. The remaining benefits concern mostly expenses on disablement support, legal aid support, individual subsidies on rent, student transport subsidies and other social assistance. They are based upon direct information provided by the Dutch State, the Municipalities and other government bodies.

Methods

The volume measure of government production for own consumption is calculated as a residual. However, for subsidised education a specific volume method is utilised based on the number of pupils (for primary and secondary education). Also for environmental services a specific volume measurement is developed based upon the quantity of household garbage that is collected by municipal departments for the environment.

Concerning the social benefits in kind volume measures from CVZ are used for constant price estimates of health services. For the other social benefits each commodity, is deflated on the basis of the CPI.

5.3 NPISH final consumption

Source information on a monthly or quarterly basis is not available. The figures follow the changes in household consumption expenditure.

5.4 Gross capital formation

Gross capital formation consists of gross fixed capital formation and changes in stocks and valuables. Hardly any information is available on changes in stocks. The data are typically derived residually during the commodity balancing process. Data on valuables are not available at all on a quarterly basis.

Gross fixed capital formation is an important final expenditure category. For the sake of the SUTs, the asset types are broken down into product groups. Gross fixed capital formation consists of producers' acquisitions less disposals of fixed assets; tangible as well as intangible fixed assets and major improvements to land (reclamation, land consolidation and land preparation for building). Fixed capital formation also includes:

- Construction work in progress, such as unfinished dwellings, non-residential buildings and civil engineering works, is recorded as fixed capital formation of the client.
- Military structures and equipment, similar to those used by civilian producers, such as airfields and hospitals.
- Improvements to existing fixed assets that go well beyond the requirements of ordinary maintenance and repairs.

- Transfer costs of fixed assets, such as conveyance fees and costs made by real estate agents, architects and notaries.
- Royalties and licences.

On the level of the total economy and the sectors, an adjustment is made for the transactions in used (second hand) fixed assets, which are seen as investments of the buyer and desinvestments of the seller. This adjustment is not made for the industries.

Sources and methods

Gross fixed capital formation is based on the supply of commodities (indirect method) in the QNA. Information is based, for example, on construction statistics, imports and turnover data of different industries. In contrast, the ANA are compiled by using direct information on the expenses of industries, whereby the expenses are specified into different types of assets.

The value changes (year-on-year) are calculated with the aid of the turnover of the construction industry (construction turnover index), the monthly industrial production index, the value changes of the imports of capital goods, value changes of the construction of new orders received, changes of the transfer taxes, changes of the turnover of architect and engineering agencies, changes in the different components of the transport industry and changes of cultivated assets.

For a large part (about 40 percent), the estimated value index for gross fixed capital formation is based on the construction turnover index. As in the construction statistics on the supply side, the construction of new orders received is used to split total production into construction of dwellings and other buildings, based on the value of building permits. In addition to the construction statistics, information from architect and engineering agencies is used to estimate developments of different kinds of construction activities.

Major investment projects: major investment projects lasting for several years are launched on a regular basis: these projects often relate to large infrastructural works or big production plants. To provide accurate records of these projects which are consistent over time, the use table includes a separate inventory column covering the work in progress linked to major investment projects. The overall investment figure is broken down over time in the light of specific studies of the progress of such projects. Additions to work in progress continue to be made until a project is completed. Then a withdrawal takes place and the investment is shown as a counter-entry.

Gross fixed capital formation produced on own account: gross fixed capital formation produced on own account, e.g. developed and produced software for own use or production of machinery for own use, is estimated by using the changes in gross fixed capital formation of the corresponding goods.

Industrial output price indices are used to obtain a quantity indices. For deflators of the construction industry we refer to section 4.5.2. For the few types of commodities for which no data are available, the price and value changes of a related commodity is used or the changes are set to zero.

Desinvestment: desinvestments are assets that are sold abroad or domestically to consumers. Estimation of desinvestments is done differently for different assets. For example, leased cars are estimated by taking approximately 40 percent of the cars in the same quarter four years ago.

Gross fixed capital formation by destination, economic activity, origin and product: the totals of the rows that result after putting in the changes are distributed to 7 destinations. The distribution is done according to the base quarter. Only for the construction of buildings actual information is available.

After the distribution to the different destinations, the VAT per destination is calculated (some firms/destinations are excluded from VAT). The VAT also depends on kind of product and type of asset. Publication of the quarterly gross fixed capital formation is inclusive of VAT. Furthermore VAT on prepared land used for buildings is included in the gross fixed capital formation.

5.5 Imports, exports

Imports and exports of goods

In the QNA the import and export of goods are specified into intra and extra EU trade. Exports are further classified into domestically manufactured products and re-exports (exports of imports).

Sources

The major source for imports and exports of goods are the International trade statistics compiled by the international trade department (TIH).

Enterprises whose trade flow annually exceeds 400,000 euro are obliged by law to submit their data to CBS. Over 40,000 enterprises fall into this category. Estimates for the other 160,000 survey units which also import and export goods are based on VAT data supplied by the Ministry of Finance. VAT data are also used to maintain the business register. Each month CBS receives data from the tax authorities.

Data on trade with non-EU countries mainly originate from the customs authorities. Some units that trade with non-EU countries have permission to supply data directly to CBS, in a similar manner to the survey units trading within the EU. All data from survey units, which may arrive up to the last day of the month following the period under review, are included as response in the month concerned.

Methods

The input from TIH for QNA consists of: survey results, imputations for non-responding enterprises included in the survey and estimations for enterprises that are in the population but excluded from the survey. Following EU guidelines, TIH uses the Combined Nomenclature (GN code). For estimates and imputations TIH uses its own classification of commodities. For both classifications of TIH there is a link (a bridge) to the QNA-commodity group. The classification in the SUT is based on QNA-commodity groups derived from CPA/CPC classifications.

Estimating the level of trade of a commodity group in QNA is done according to the following method: firstly, the absolute mutations per commodity group in the source statistics of the current quarter with the respect to reference period are calculated. Subsequently these absolute mutations are added to the level of the corresponding quarter of the previous year in the QNA which results in the level of trade per commodity of the current quarter in current prices.

The data are deflated on the basis of producers' price data, which comprise of price indices of exports, imports and domestic prices. To deflate the exports of products manufactured in the Netherlands, both to EU and non-EU, the producers' price index of exports is used. For imports and re-exports to the EU and non-EU the price index of imports is used. If export and import prices are not available, the domestic price is used.

As already mentioned above, the SUT contains the import and export of goods specified into intra and extra EU trade. It is also mandatory to divide EU trade in EMU-members and non-EMU members. However, as there is no balancing process at this sublevel, the ratio of EMU and non-EMU countries in the sources statistics is applied to the integrated QNA data.

Imports and exports of services

From the beginning of 2003 CBS started its own quarterly survey on imports and exports of services. Until 2007 a total number of 11 categories of services were distinguished by the source department, although data were gathered at a more desaggregated level. In the QNA these 11 categories were distributed, with the help of a distribution key, into more services categories. From 2008 onwards some further subdivisions have been made by the source department, resulting in the following list of services categories:

- 1 Transport services: further divided into sea transport, air transport and other transport (all further divided into passenger, freight and supporting services)
- 2 Travel services: business travel and private travel
- 3 Communication services
- 4 Construction and architectural services
- 5 Insurance services
- 6 Financial services
- 7 Computer services
- 8 Royalties and licences
- 9 Other business services: services related to trade and transit trade, operational lease, and other business, professional and technical services
- 10 Personal, cultural and recreation services: audio-visual services and the like and other personal, cultural and recreation services
- 11 Government services

Since the QNA still uses more service categories, these services are further subdivided with the help of a distribution key.

6. GDP components: the income approach

6.1 Compensation of employees, including components (wages and salaries)

Total wages and salaries by about 120 branches of industries is available on a quarterly basis from administrative records of the tax and social security authorities. These data are adjusted to ESA-definitions by adding wages and salaries in kind (notably the interest advantage of employees of financial corporations, free or reduced transport prices for employees of specific corporations, grants for kindergarten, free company cars), 'black' wages and salaries, and grants for homework commuting. The basic data also comprise of continued payments in case of sick leave. These payments are excluded from the wages and salaries and added to the employers' social contributions.

Data on employers' social contributions are derived from the administrative records of the tax and social security authorities and the pension funds.

6.2 Taxes less subsidies on production

The taxes on production comprise mainly of taxes on motor vehicles, taxes on the ownership of houses and environmental levies. Subsidies on production consist mostly of wage subsidies for specific labour categories and EU-subsidies on agriculture and cattle breeding. Data are obtained from the Ministry of Finance and volume data are compiled in a similar way as the taxes and subsidies on products (see paragraph 4.3).

6.3 Gross operating surplus and mixed income

Gross operating surplus and mixed income are derived residually as the difference between the output of industries and their intermediate consumption, compensation of employees and taxes less subsidies on production.

7. Population and employment

CBS produces Labour Accounts on a quarterly basis, in line and consistent with the QNA. The Labour Accounts provide statistics on the number of jobs, full-time equivalents (FTE's), contractual hours, hours paid, hours actually worked and compensation of employees, including a break down into wages and salaries and employers' social contributions. The accounts are broken down into 120 branches of industries (based on NACE), job size (full-time, part-time), labour relation (fixed or flexible contracts) and dependency (self-employed or family worker, employee). The major sources utilized are the recently integrated administrative registers of the tax and the social security authorities. The administrative registers of tax and the social securities covers almost all job of employees working in the Netherlands. The information about the jobs and worked hours of self-employed is obtained from the Labour Force Survey (LFS), which covers 0,5 percent of the labour force.

7.1 Population

A complete database on legal persons in the Netherlands is available, based upon administrative registers of municipalities. The temporal reference of the population is the average between two dates (based on monthly averages).

7.2 Employment: persons

The total number of jobs of employees is monthly available from the administrative records of the tax and social security authorities. The translation to number of persons employed is pursued on the basis of the corresponding annual ratios. For the self-employed data on the number of jobs are available from the LFS.

7.3 Employment: total hours worked

The core of the Labour Accounts system contains data on contractual hours, paid hours overtime and total hours paid. To estimate hours actually worked different methods are used for employees and self-employed:

Employees: the so-called 'component' method is used. This means that the number of contractual hours is taken as a starting point. This number is translated into the number of hours actually worked by adding or subtracting various time components. Added time components are paid and unpaid overtime. Subtracted components are sick leave, pregnancy and maternity leave, short leave, bad weather leave and short-time. For data on the number of contractual hours (the larger part) and paid overtime of employees, several sources are used. The other time components are derived from various other sources. Data on days lost because of strikes and on bad weather leave become available from specific registrations. Sickness and pregnancy leave is recorded quarterly in an establishment survey which approaches personnel departments. Data on maternity leave is used from the labour force survey and estimations for short leave are based on information from the labour cost survey. Some of these data are only available on annual basis and additional assumptions are needed to construct hours actually worked on a quarterly basis.

Self-employed: the hours actually worked per self-employed are taken directly from the Labour Force Survey. The number of self-employed (per NACE group) is taken from within the Labour Accounts system.

8. From GDP to net lending/borrowing

This chapter explains transition from GDP to net lending/borrowing. The first paragraph describes the transition from GDP to GNI, while the second paragraph focuses on national disposable income, saving and net lending/borrowing. Data are mostly derived from the balance of payments, exceptions are explicitly described.

8.1 Transition from GDP to GNI

The difference between GDP and GNI is due to compensation of employees paid to and received from abroad, taxes and subsidies related to production and imports and property income paid to and received from abroad⁶. Property incomes comprise of interest and dividend flows, income from quasi-corporations, reinvested earnings on direct foreign investment and property income attributed to policy holders.

Compensation of employees: data on compensation of employees based on the number of cross-border workers with mandatory health insurance in either the Netherlands, Belgium or Germany, are combined with employment statistics containing data on wages and the number of employees with or without mandatory insurance. This yields an estimate of the total number of cross-boarder workers in the Netherlands and their overall wages and salaries. Domestic ratios on the number of cross-border workers working in the Netherlands are then applied to cross border workers working in Germany and Belgium to estimate wages and salaries received from abroad. Pension payments as part of the employers' social contributions are also included. The estimate of contributions to pension schemes is derived from the corresponding domestic ratio of employers' social contributions to wages and salaries. Because pension systems in other countries are mostly pay-as-you-go schemes, no specific estimate is made for pension payments by Dutch residents working abroad.

Taxes and subsidies on production and imports: taxes on production and imports are levied by the institutions of the European Union (EU). These taxes on products are subdivided into payments to the EU on VAT basis, import duties and levies on agricultural products and food. Other taxes on production consisted solely of levies on sugar supplies.

The EU share of VAT revenue is obtained from the State Record. EU import duties are derived from the Ministry of Finance taxation charts. The cash-based amounts in these data are converted to accrual based transactions (one month adjusted cash) and the transit-flow import duties identified with the aid of the Foreign Trade Statistics are eliminated. EU levies on imported foodstuffs and domestic sugar reserves are based on Ministry of Agriculture reports.

The subsidies on products and other subsidies on food production received from the EU are derived from monthly reports by the Ministry of Agriculture and the Agricultural Equalisation Fund (LEF).

⁶ Special Purpose Entities (SPE's) have been included in the figures as part of the 2001 revision of the Dutch national accounts. Compared with previously published data, interest and dividend payment and receipt to and from abroad and reinvested earnings on direct foreign investment are now significantly higher. The SPE's are defined as mother companies owned by non-residents or daughter companies which are part of a direct foreign investment group, resident in the Netherlands but largely without local production establishments and often only with a mail address. In the past they have been excluded because these units have only limited significance for the Dutch economy. However, since they do have some impact on a net basis and the exclusion of SPE's created inconsistencies with RoW figures from other countries, it was decided that they should be included in the national accounts. It should be noted that the SPE's have always been compiled as part of the Dutch balance of payments.

Property incomes: property incomes paid and received to and from the rest of the world are derived from the balance of payments. Interest payments and receipts are directly based on balance of payments data, which registers these flows on an accrual basis. With respect to interest payments to and from parent and daughter companies: the balance of payments practice of netting the payments because of application of the directional principle is followed. After the proper level of the interest payments and receipts is determined the amounts of net of FISIM are computed.

Dutch dividends to and from the rest of the world are registered net, i.e. after deduction of withholding tax. Consistent application of this principle means that any withholding tax refunded is also recorded as a (negative) dividend. Since taxation at source constitutes a tax on income and investment and cannot, therefore, be regarded as a primary income transaction, it must be eliminated from dividend flows for national accounts purposes.

In the Netherlands, withholding tax on profit income takes the form of dividend taxation which is intended as an advance component of the income and corporation tax to be fixed subsequently. Dividend tax can be fairly easily calculated from the rates applicable to non-resident shareholders. These rates can be divided into 'standard share dividends' paid on portfolio investments (16 percent), and 'participation dividend' paid on direct investments (no taxes are due on EU based direct investment, otherwise a 5 percent rate). The amount of dividend tax withheld by the Netherlands can be calculated with the aid of the above mentioned percentages and the balance of payments, dividend type and country of destination breakdowns (EU or non-EU). The correlation of the calculated amount with the total dividend tax yield identified by the tax administration is verified annually by way of a plausibility check.

It is more difficult to determine the rest of the world withholding taxes or advances thereon paid by the Netherlands. Dutch institutional investors are assumed to enjoy a levy exemption, as taxation agreements exist with virtually all countries in the world. This limits the payment of RoW withholding tax to two groups, namely individual Dutch portfolio investors and Dutch enterprises with capital participation abroad. External withholding tax on portfolio investments is again determined by applying the 16 percent rate. The withholding tax on direct investments was calculated some years ago from corporation tax declarations in the context of a structural survey. The result of this calculation is adjusted annually in line with the participation dividends received by the Netherlands.

Adjustment for Units for Collective Investment: a substantial proportion of investment income (interest and dividends) of Units for Collective Investment (UCIs) or mutual funds is not distributed to shareholders but transferred to the reserve. In accordance with ESA 95 this investment income is credited as shareholder dividend income. The amount is calculated as the difference between UCI estimated investment income received less the actual dividend paid out.

The estimated investment income of the UCI's located outside the Netherlands (but with strong connections to Dutch financial institutions) is determined on the basis the dividend and bond yields, whereby 64 percent of the total is accredited to Dutch shareholders in the Netherlands and the remainder to non-residents. This percentage was calculated with the aid of DNB data on the geographical distribution of Dutch RoW holdings, as most funds are located in either Luxemburg or the Netherlands Antilles.

No data are available for the RoW accreditation of investment income of Dutch UCIs. The only possible approach involves a tentative estimate of the RoW component of UCI share capital. This is put at 10 percent. The results of the study are extrapolated on the basis of total cross-border dividend payments and the dividend payments of Dutch UCIs.

Reinvested earnings on direct foreign investment: the reinvested earnings on direct foreign investment are obtained from the balance of payments. They are calculated as the amount of income retained in direct foreign investment enterprises after deduction of local income taxes and paid dividends. However, an adjustment is made for the outgoing reinvested earnings of SPE's. The income generated

by these foreign owned companies should be allocated to the RoW. However, from the balance of payments no data are available on local payments and receipts such as interest and taxes. Therefore, the reinvested earnings calculated in the balance of payments for SPE's usually differ slightly from the required reinvested earnings based on the current account for SPE's in the Dutch national accounts.

Property income attributed to insurance policy holders: property income attributed to policyholders is not recorded as a transaction in the Dutch balance of payments. On the basis of balance of payments data and the Insurance Board annual reports, which summarise the reports of all supervised pension funds and life insurance companies in the Netherlands, a model has been developed to estimate the relevant transactions.

The investment yield from foreign insurance companies to be attributed to Dutch policyholders is assumed to relate exclusively to individual life insurance policies. There is no evidence of collective insurance of Dutch workers under foreign pension funds. The investment income from foreign life insurance policies is calculated by applying the ratio of investment return on total actuarial reserves of life insurers in the Netherlands to the foreign actuarial reserves owned by Dutch residents.

In the case of income paid to abroad, a distinction is made between life and pension insurance. Based on life insurance annual reports 0.5 percent of total income attributable to policyholders is allocated to non-residents. Data on pension insurance are based on the most recent annual figures.

8.2 Transition from GNI to net lending/borrowing

Net disposable income is obtained by subtracting from the GNI the consumption of fixed capital and adding the net amounts (receipts from abroad less payments to abroad) of current taxes on income, wealth, etc., social contributions, social benefits other than social transfers in kind, and other current transfers.

Consumption of fixed capital: annual consumption of fixed capital is estimated on the basis of the PIM-method using data on gross fixed capital formation by various assets categories and estimations of average service lives. The quarterly growth rates on consumption of fixed capital correspond to the estimated annual growth rate (for the most recent year based on extrapolations of gross fixed capital formation). Independent quarterly data are not compiled. The PIM-method is part of a framework to estimate capital stock (opening and closing balance sheets) and the changes thereof (including fixed capital formation, revaluations and consumption of fixed capital). An elaborate description of the methodology used is found in the Dutch GNI-Inventory of 2001.

The current taxes on income, wealth, etc. are taken from the balance of payments. The social contributions are estimated from the compensation of employees to and from abroad and the average social contributions of the previous year, while social benefits other than social transfers in kind are estimated from state pension data, information from private pension schemes and social security funds. Non-life insurance premiums and claims are derived from counterpart information from the insurance corporations. Data on other current transfers are derived from the State Budget. These are mostly payments related to international cooperation. Receipts are rather small and partly taken from the State Budget and the balance of payments.

Net saving is obtained by adjusting the net disposable income to the change in net equity of households on pension funds. This adjustment for the change in net equity of households on pension funds is simply calculated as the difference between pension premiums received and pension premiums paid to abroad.

Finally, net lending/borrowing is obtained by adding to net saving the net capital transfers reviewed from abroad. Investment grants and capital taxes are mostly derived from State Records, including the Ministry of Finance. The other capital transfers received and paid are taken from the balance of payments.

9. Flash estimates

9.1 Flash GDP estimates

The procedures for the flash estimates are completely similar to the regular estimates. The only difference concerns the availability of source data. In some instances only two months are available where for the regular estimates information relates to the full quarter. This applies for example to data on energy and agriculture. Sometimes three months are already available but with a somewhat lower response, i.e. data on manufacturing industries and on the international trade in goods. Data on transport services and communication and the international trade in services is not available at all for the flash estimates; data are rather extrapolated on the basis of the growth rates of the previous quarter.

9.2 Flash employment estimates

The procedures for the flash estimates and the regular estimates are similar. As with the GDP flash estimates less data are available, often only two months or three months with less response.