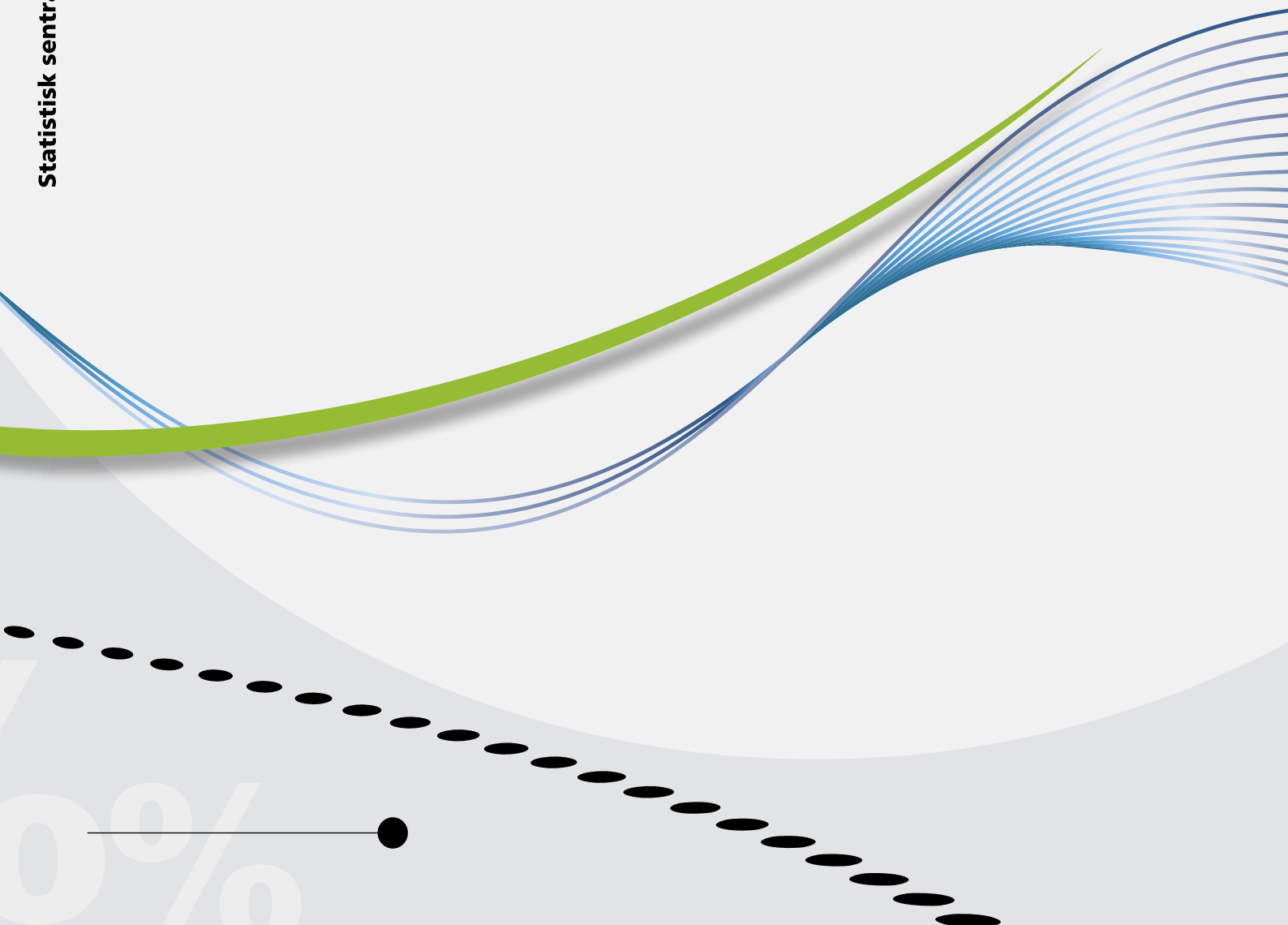*Kornelie Korsnes*

Quarterly National Accounts

Methods and sources of the quarterly national accounts compilations for Norway December 2013

Kornelie Korsnes

Quarterly National Accounts

Methods and sources of the quarterly national accounts compilations for Norway
December 2013

Documents   In this series, documentation, method descriptions, model descriptions and standards are published.

Preface

The structure of this document is written in accordance with the guidelines developed by the Statistical Office of the European Communities (Eurostat) in the document "Guidelines for the drafting of QNA inventories" (Eurostat 2006). A common template for country-specific information is useful to ease comparison of national differences in methods and sources of the quarterly national accounts compilations. This document is intended for expert users as well as a broader audience.

Statistics Norway, 23 December 2013

Hans Henrik Scheel

Abstract

The document is divided into chapters containing detailed information on the compilation of the Quarterly National Accounts (QNA). The objective is to provide a transparent and explicit description of the sources and methods in use.

Chapter one, in addition to an overview of the organisation and institutional arrangements in Statistics Norway, serves as a quick summary of the document and contains the most essential information explained in more detail in the following chapters. Chapter two presents a publication timeline for relevant statistics released by the Division for National accounts, as well as revision- and co-ordination policy. Chapter three goes into detail on the overall compilation approach, including aspects such as balancing, benchmarking and seasonal adjustment methods. Chapter four to six deals with the calculation of gross domestic product from the three different approaches (production-, expenditure and income approach), while chapter seven explains the sources and methods of the integrated labour accounts. Chapter eight describes the components from GDP to net national saving, which is overlapping with the compilations of the Balance of Payments and the non-financial sector accounts, but which is also published as part of the QNA. The appendix lists the source statistics, with added information relevant to its use in QNA, and which is referred to mostly by name and not comprehensive description in chapter four to eight to hinder too many distracting details. The proposed chapter nine in the guidelines was left out since Norway does not compile flash estimates.

Contents

1. Overview of the system of quarterly national accounts

1.1. Organisation and institutional arrangements
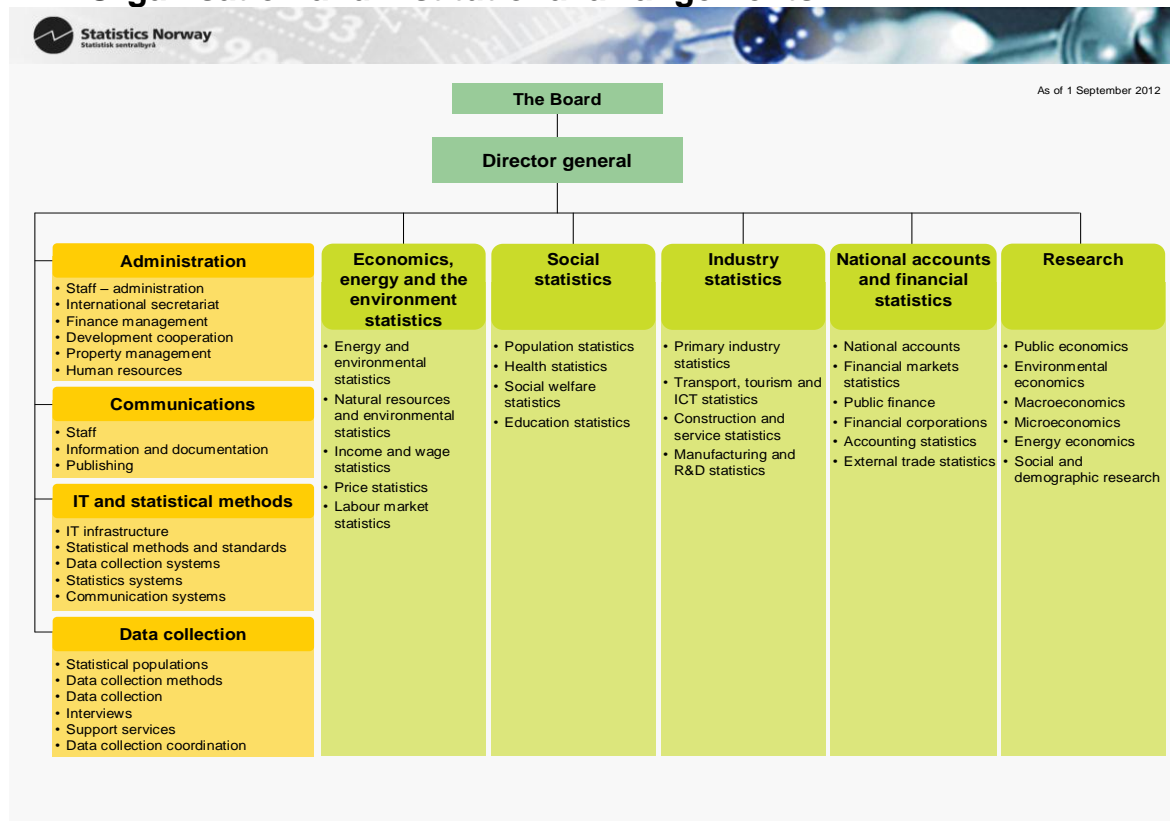
The Norwegian Quarterly National Accounts (QNA) are compiled at Statistics Norway by the Division for National accounts. Statistics Norway is an independent government institution placed under the Ministry of Finance and governed by the Board of governors and the Director General. The Statistics Act of 1989 provides the legislative framework and guidelines, and the financial outline of Statistics Norway's production is set at any time by the Government and the National Assembly.

The annual and quarterly non-financial sector accounts, as well as the Balance of Payments (BoP) are compiled by the Division for National accounts, while the Division for Financial market statistics is responsible for the financial accounts[1]. The government accounts are compiled by the Division for Public finance in cooperation with the Division for National accounts and are consistent with the figures from quarterly- and annual national accounts. In general, the majority of input used in the compilation of QNA is produced and separately published by other divisions in Statistics Norway.

1.2. Publication timetable, revision policy and dissemination of QNA

QNA are published four times each year, about 50 days after the end of the given quarter. The accounts for the first quarter of the current year are published in May, together with revised figures for the previous year. Figures for the second quarter are published in August, together with revised figures for the first quarter. In November, the first figures for the third quarter are published together with revised

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[1] The relationship between financial accounts and other parts of the national accounts system is given by the balancing item net lending/net borrowing.

figures for the first and second quarter and revised figures for the past two years. In this publication, the results for year t-2 are considered final. Finally, figures for the fourth quarter are published in February the following year, together with revised figures for the first, second and third quarter.

1.3. QNA compilation approach

The Norwegian QNA are compiled according to what is known as the *direct approach* (ESA 2010 §12.08). That means that the quarterly compilations are, with appropriate simplification, based on the same sources and methods as those used to compile the Annual National Accounts (ANA). This is as opposed to the *indirect approach*, which utilises statistical and econometric estimation techniques (usually temporal disaggregation) on information from annual data and infra-annual indicators.

The Norwegian QNA compilations relies on a range of quarterly indicators, which are used to extrapolate the latest annual figures, and which are then automatically balanced for current and constant unadjusted figures in an input-output model to create fully balanced supply and use tables (SUT). The structure of the supply and use in the economy is taken from the latest ANA, which means that the input-output coefficients are an aggregated version of the supply and use tables from ANA. These coefficients are updated every year in November when the ANA for year t-2 are final and published, and a new base year is established in the QNA input-output model.

The QNA are compiled at a detailed level for SUT consisting of about 80 industry groups, 39 groups for household final consumption expenditure and 120 product groups, and with cross classification of gross fixed capital formation for three to five asset types in each industry. The data is published at a more aggregate level, described in chapter 2.

1.4. Balancing, benchmarking and other reconciliation procedures

The QNA are benchmarked to the final ANA in a way that best preserves the quarterly pattern, achieved (mainly) by applying a mathematical technique known as the proportional Denton method. Benchmarking of the quarterly figures to the independently derived final annual figures is necessary, as the annual data represents more reliable and detailed information, and to assure consistency between the ANA and the QNA. The annual figures for years succeeding the latest final ANA is simply the sum of the quarters from QNA. Hence, ANA and QNA are at all times fully consistent.

The three approaches to GDP are consistent by definition in the input-output model, meaning that GDP is determined from the production approach, while changes in inventories/statistical discrepancies and operating surplus are residuals used as balancing items in the expenditure and income approach respectively.

Figures for labour market variables are made as part of the integrated quarterly labour accounts and published at the same industry level as the rest of the QNA.

1.5. Volume series

In order to form volume time series, i.e. to strip the time series of fluctuations in prices, the accounts in the average prices of the previous year is compiled (using Laspeyres volume indices and Paasche price indices), with subsequent linking of the volume time series. The data is chain-linked using the annual overlap method. However, the figures from the base year and onwards, which is the latest final ANA, are fixed price estimates (with the base year in the input-output model being

the constant price year and the reference year for the chain-linked estimates) and hence additivity in the components are present for this period.

1.6. Seasonal adjustment and working day correction

The last step of the compilation of QNA is calendar- and seasonal adjustment, using X12-ARIMA. The figures from the year prior to the base year and onwards are adjusted by indirect seasonal adjustment, meaning that the aggregate is a sum of its components. The aggregates of the time series prior to the year before the base year are adjusted using direct seasonal adjustment, in order to avoid unnecessary revisions (see chapter 3.3.3). Furthermore, the series of gross value added are adjusted directly and not as the difference between production and intermediate consumption. Model selection is primarily automatic and continuous (concurrent adjustment). Seasonally adjusted series are not benchmarked to the annual unadjusted data. The adjusted figures are balanced in the sense that changes in inventories/statistical discrepancies are treated as balancing items to assure consistent estimates of GDP. The same seasonal adjustment factors are used for volume and current price estimates, and prices are residuals to keep the relationship Δ value/Δ volume=Δ price, as in unadjusted data. Working-day adjustment means calculating the QNA as if each quarter contained the same number of working days. Working-day adjusted series, as well as trend estimates, are not published separately but are made as part of the seasonal adjustment routine.

1.7. Additional information

The QNA press release is focused mainly on q/q growth in seasonally adjusted volume figures and q/q contributions to growth. Tables with growth contributions are not published, but as already noted, the figures from the base year and onwards are fixed price estimates which are seasonally adjusted indirectly such that additivity is present. Hence, calculating contributions to growth is straight forward. For detailed information on volume time series, see chapter 3. The QNA press release is published in Norwegian and English and is available at 10.00 am at: http://www.ssb.no/en/nasjonalregnskap-og-konjunkturer/statistikker/knr

2. Publication timetable, revision policy and dissemination of QNA

2.1. Release policy

The Norwegian QNA are published approximately 50 days after the end of the reference period, four times each year. Thus the QNA are to be expected around the 20th of February, May, August and November. The release dates in year t are final in November in year t-1 and dates are given in Statistics Norway's release calendar. All releases by Statistics Norway are scheduled at 10 a.m. The QNA are published together with final annual figures for year t-2 from the ANA in November, and as the final annual year is the base year in the QNA, figures for quarters dating back to year t-2 are revised. In February, along with the first figures for the 4th quarter of year t-1, the three preceding quarters are revised. In May, all quarters of year t-1 are revised, while in August only the first quarter of year t is revised. The preliminary annual figures from year t-2 and onwards are simply the sum of the quarterly figures and provided alongside quarterly figures in the QNA release.

The QNA are fully consistent with the figures provided in the quarterly non-financial sector accounts (QSA), which are usually published one day after the corresponding QNA and are subject to the same revision standard. The final annual sector accounts are published for year t-2 together with the ANA and QNA in November, while preliminary annual non-financial sector accounts are published

for year t-1 in the beginning of March, and the revised preliminary annual figures are provided at the end of May and in November. BoP statistics are in Norway fully integrated with NA. The quarterly BoP statistics are published approximately 60-70 days after the reference period, with imports and exports data consistent with the QNA published about two weeks earlier. The annual BoP figures (preliminary and final) are the sum of the quarters.

Table 2.1.   Release and revision overview, the Norwegian National Accounts Division

Approximate date year t		Release	Data published[2]	Revised periods
February	q4, year t-1 + 50 days	Quarterly national accounts	q4 in year t-1 and annual estimates for year t-1, 1st edition	q1-q3 in year t-1
	q4, year t-1 + 51 days	Quarterly non-financial sector accounts		
Beginning of March		Balance of payments		
		Preliminary annual non-financial sector accounts	Annual estimates for year t-1, 1st edition	
May	q1, year t + 50 days	Quarterly national accounts	q1 in year t, annual estimates for year t-1, 2nd edition	q1-q4 in year t-1
	q1, year t + 51 days	Quarterly non-financial sector accounts		
End of May		Preliminary annual non-financial sector accounts	Annual estimates for year t-1, 2nd edition	
Beginning of June		Balance of payments	q1 in year t	q1-q4 in year t-1
August	q2, year t + 50 days	Quarterly national accounts	q2 in year t	q1 in year t
	q2, year t + 51 days	Quarterly non-financial sector accounts		
Beginning of September		Balance of payments		
November	q3, year t + 50 days	Annual national accounts	Final annual figures for year t-2	Annual estimates for year t-1
		Annual non-financial sector accounts		
		Quarterly national accounts	q3 in year t , annual estimates for year t-1, 3rd edition, and final annual estimates for year t-2	q1 and q2 in year t, q1-q4 in year t-1, q1-q4 in year t-2
		Quarterly non-financial sector accounts		
Beginning of December		Balance of payments		

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[2] QNA time-series from 1978 to the present are published for every quarter, with the exception of variables from the quarterly labour accounts which are published with time series starting in 1995.

In every QNA release a table with the magnitude of the revisions in the main aggregates for unadjusted and seasonally adjusted data is provided, and more detailed information is supplied upon request. The revisions of the unadjusted quarterly account figures are mainly due to revisions in input data, which when initially incorporated in the QNA may have been rough estimates, or for some statistics, subject to routine revisions. For an overview of the main data sources used and the status of input at time of the QNA release, see the appendix and chapter 4-6. When a new base year is updated in the QNA, the quarterly data is benchmarked against the final annual figures and the revisions are attributable to the new and final annual data.

2.2. Contents published

The QNA are compiled as fully balanced supply and use tables (SUT). As is the case for the annual national accounts, the QNA contain national aggregates and consist of supply and use tables at current and constant prices (volume figures). In addition, the QNA system also produces tables with seasonally adjusted figures. The accounting structure of the QNA is, however, more aggregated than in the final annual SUT. While the SUT in the final annual accounts consist of 155 industry groups and about 800 product groups, the SUT in the quarterly national accounts consist of about 80 industry groups and 120 product groups. The published level of breakdown is even more aggregated, as described below.

The following data are available at Statistics Norway's StatBank when the QNA are released:

- Production and income generation accounts data (including output at basic prices, intermediate consumption and value added at basic prices)[3] by industry (see table below)
- Final consumption expenditure of households by consumption group (COICOP top level) and durability[4]
- Final consumption expenditure by local and central government (individual and collective consumption)
- Final consumption expenditure of NPISHs
- Gross fixed capital formation by asset type[5] and industry
- Imports and exports of goods and services by product groups[6]
- Fully integrated labour accounts including wages and salaries, compensation of employees, employed persons (employees and self-employed), full time equivalent employment and total hours worked, by industry
- In addition, tables for net (nominal and real) national disposable income and net (nominal and real) national saving (including components), are available as CSV files

Data are presented at both current prices, as fixed price/volume estimates (both unadjusted and seasonally adjusted), as well as value-, volume- and price change, y/y and q/q (unadjusted and seasonally adjusted).

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[3] Gross domestic product is measured at market prices, while value added by industry is measured at basic prices

[4] Non-durable goods, semi-durable goods, durable goods and services.

[5] 6 types: building and construction, petroleum drilling/exploration/pipelines, platforms and modules, ships and boats, other transport vehicles, machinery and equipment.

[6] The product classification used in QNA is an aggregate of the detailed product classification of the annual NA, which in turn is based on the European product classification CPA (Product Classification by Activity). The QNA product classification is an analytical grouping that broadly corresponds to the 3-digit groupings of the CPA. The published product groups for imports and exports are chosen from an analytical point of view (country-specific importance).

The publication of QNA according to economic activity is done at a level comparable to classification A38 of the NACE Rev.2[7], with an added dimension of sector specific information for general government.

Table 2.2. Level of industry breakdown for contents published

Level of breakdown/Kind of activity	NACE Rev.2
Agriculture and forestry	01 + 02
Fishing and aquaculture	03
Mining and quarrying	05 + 07 + 08 + 09.9
Oil and gas extraction including services	06 + 09.1
Oil and gas extraction	06
Service activities incidental to oil and gas	09.1
Manufacturing	10-33
Food products, beverages and tobacco	10 + 11 + 12
Textiles, wearing apparel, leather	13 + 14 + 15
Manufacture of wood and wood products, except furniture	16 + 17
Manufacture of paper and paper products	17
Printing and reproduction of recorded media	18
Refined petroleum, chemical and pharmaceutical products	19 + 20 + 21
Manufacture of basic chemicals etc	20.1
Rubber, plastic and mineral products	22 + 23
Basic metals	24
Machinery and other equipment n.e.c	25 + 26 + 27 + 28
Building of ships, oil platforms and modules	29 + 30
Furniture and other manufacturing n.e.c	31 + 32
Repair and installation of machinery and equipment	33
Electricity, gas and steam	35
Water supply, sewerage, waste	36 + 37 + 38 + 39
Construction	41 + 42 + 43
Wholesale and retail trade, repair of motor vehicles	45 + 46 + 47
Transport via pipelines	49.5
Ocean transport	50.101 + 50.201+50.204
Other transport activities	49.1 + 49.2 + 49.3 + 49.4+ 50.102 + 50.109 + 50.202 + 50.203 + 50.3 + 50.4 + 51 + 52
Postal and courier activities	53
Accommodation and food service activities	55 + 56
Information and communication	58 + 59 + 60 + 61 + 62 + 63
Financial and insurance activities	64 + 65 + 66
Real estate activities	68.1 + 68.209 + 68.3
Imputed rents of owner-occupied dwellings	68.201 + own calculations
Professional, scientific and technical activities	69 + 70 + 71 + 72 + 73+ 74 + 75
Administrative and support service activities	77 + 78 + 79 + 80 + 81 +82
Public administration and defence	84
Education	85
Health and social work	96+87+88
Arts, entertainment and other service activities	90 + 91 + 92 + 93 + 94 +95 + 96 + 97+ 99
Mainland Norway	All industries with the exception of: 06 + 09.1 + 49.5 + 50.101 + 50.201 + 50.204
General government	
Central government	
Civilian central government	
Defence	
Local government	

The QSA are at present published only for households and NPISHs. The remaining non-financial sector accounts (financial corporations, non-financial corporations, general (central and local) government, and the rest of the world account) are part of the preliminary and final annual non-financial sector accounts and published in accordance with the timetable in section 2.1. The QSA are planned to be released for all sectors by the end of 2014.

The latest versions of national accounts data can be found here:
http://www.ssb.no/en/nasjonalregnskap-og-konjunkturer

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[7] The activity classification is based on the Norwegian Standard Industrial Classification (SN2007), which is an elaboration of the EU standard adopted for ESA 1995, i.e. NACE Rev.2. This European standard is identical with ISIC Rev.4 at the aggregated level, which is the common international standard.

2.3. Special transmissions

QNA at the most detailed level are made available through secured government databases at the time of publication for the Ministry of Finance and Norges Bank (the central bank of Norway). The detailed series may be available for all users upon request. In addition, special calculations may be supplied for users on a service basis. Both unadjusted and seasonally adjusted data are transmitted to OECD and Eurostat at time of publication, as well as some unadjusted aggregates to IMF (including preliminary estimates of the missing components in the BoP which are updated once the BoP are released about two weeks later).

2.4. Policy for metadata

Exhaustive information on concepts, sources and methods are available in the GNI Inventory for ESA95 (http://www.ssb.no/en/nasjonalregnskap-og-konjunkturer/documentation-of-the-norwegian-national-accounts) and provides a detailed description of the Norwegian National Accounts. Norway subscribes to the SDDS, which can be found at:
http://dsbb.imf.org/Pages/SDDS/CtyCtgList.aspx?ctycode=NOR

3. Overall QNA compilation approach

3.1. Overall compilation approach

The compilation of the Norwegian QNA falls under the heading of what is known in the national accounts literature as the *direct approach*[8]; an extrapolation of final annual figures by short-term indicators, in a balancing framework of supply and use tables (SUT). A supply table shows the supply of goods and services by product and by type of supplier, distinguishing between domestic producers and imports. A use table shows product by industry as intermediate consumption, final consumption expenditure, gross fixed capital formation, changes in inventories, or exports. The QNA system applies the same definitions and principles as the final Annual National Accounts (ANA), but where the SUT in the ANA are predominantly manually balanced for 155 industries and 800 categories of goods and services, the compilation of the QNA is considerably less resource demanding by utilising an automatic balancing procedure at a more aggregated level (80 industries and 120 product groups).

In essence, the QNA compilation approach is an extrapolation of the aggregated SUT from the latest ANA by the use of indicators based on short-term statistics, automatically balanced for current and constant unadjusted figures in an input-output model. The three approaches to calculating GDP are consistent by definition (i.e. production, expenditure and income, see chapters 4-6), providing a single definitive measure of GDP. The balancing model includes a commodity-flow balance (supply = use), a price input-output system and a set of equations for summaries and definitions. The input-output coefficients are calculated from the supply and use tables from the base year. The balancing procedure is performed on unadjusted data, at the most detailed QNA-level. The QNA figures are preliminary until they are benchmarked to the final ANA for year t in year t+2 (i.e. year 2011 is final in November 2013), with the input-output model updated once a year with the final ANA data. Hence, the volume figures from the base year and onwards are fixed price estimates. Preliminary ANA are simply the sum of the quarters of the

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[8] ESA 2010, § 12.08: "The direct approach is based on the availability, at quarterly intervals, of similar data sources as those used to compile annual accounts; under this approach, similar methods of compilation are applied. The indirect approach uses statistical and econometric estimation techniques that use information from the annual accounts and short-term indicators to interpolate and extrapolate from the annual estimates. The choice between these two approaches depends on the information used in the production of annual accounts being readily available in the same form at quarterly level".

QNA. Volume figures are subsequently added to chain-linked time series data (chain-linked using the annual overlap technique, see chapter 3.3.1) and finally seasonally-adjusted in both volume and value, with prices being residuals to retain the relationship value/volume = price, as in unadjusted data. The seasonally-adjusted figures are consistent in the sense of providing a single estimate of GDP, see chapter 3.4 for details.

Essentially, there are eight stages of the quarterly national accounts compilation process, as shown in figure 3.1.1. In the indicator process, the short-term statistics are used to extrapolate the latest ANA figures to provide exogenous input to the input-output model. The indicators used are presented in chapter 4-6 and with detailed source description in the appendix. The general form of the simplest extrapolation technique is given by;

$$X_{t,q} = k_{t,q} \cdot X_T \cdot \left(\frac{I_{t,q}}{\sum_q I_{T,q}} \right)$$

Where X is the QNA variable, I is the indicator, with subscript t for the current year, subscript q for quarter and subscript T indicates the base year (latest ANA). k is a correction term used to incorporate additional information to improve the estimate when such information is available, or when deviations from the source statistics is considered necessary. Indicators may be in weekly, monthly, bi-monthly etc. intervals, which require a simple conversion to quarters. Hence, the value of X from the latest ANA is extrapolated by the growth in the indicator, with the possibility of manual correction. Several indicators may be used, such that for example the production of a given industry can be assigned different short-term indicators for different parts of the product composition.

3.1.1. General architecture of the QNA system

Figure 3.1.1. The QNA compilation process

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┌──────────────┐              ┌──────────────────┐
│  1a. ANA     │              │  1b. Short-term  │
│              │              │  indicators      │
└──────┬───────┘              └────────┬─────────┘
       │                               │
       └──────────┐       ┌────────────┘
                  ▼       ▼
          ┌───────────────────────┐
     ┌───▶│  2. Indicator process │
     │    └───────────┬───────────┘
     │                │
     │                ▼
     │    ┌───────────────────────┐    ┌──────────────────────────┐
     │    │  3. Balancing in the  │    │  5. Benchmarking and     │
     │    │  input-output model   │    │  chain-linking (in       │
     │    └───────────┬───────────┘    │  November each year) and │
     │                │                │  subsequent seasonal     │
     │                ▼                │  adjustment (every       │
     │    ┌───────────────────────┐    │  quarter)                │
     │    │  4. Timeseries        │◀──▶│                          │
     │    │  databases            │    └──────────────────────────┘
     │    └───────────┬───────────┘                  ▲
     │                │                               │
     │                ▼                               │
     │    ┌───────────────────────┐                   │
     │    │  6. Output in tables  │                   │
     │    │  /graphical depiction │                   │
     │    └───────────┬───────────┘                   │
     │                │                               │
     │                ▼                               │
     │    ┌───────────────────────┐                   │
     └────┤  7. Evaluation        ├───────────────────┘
          └───────────┬───────────┘
                      │
                      ▼
          ┌───────────────────────┐
          │  8. Publishing        │
          └───────────────────────┘
```
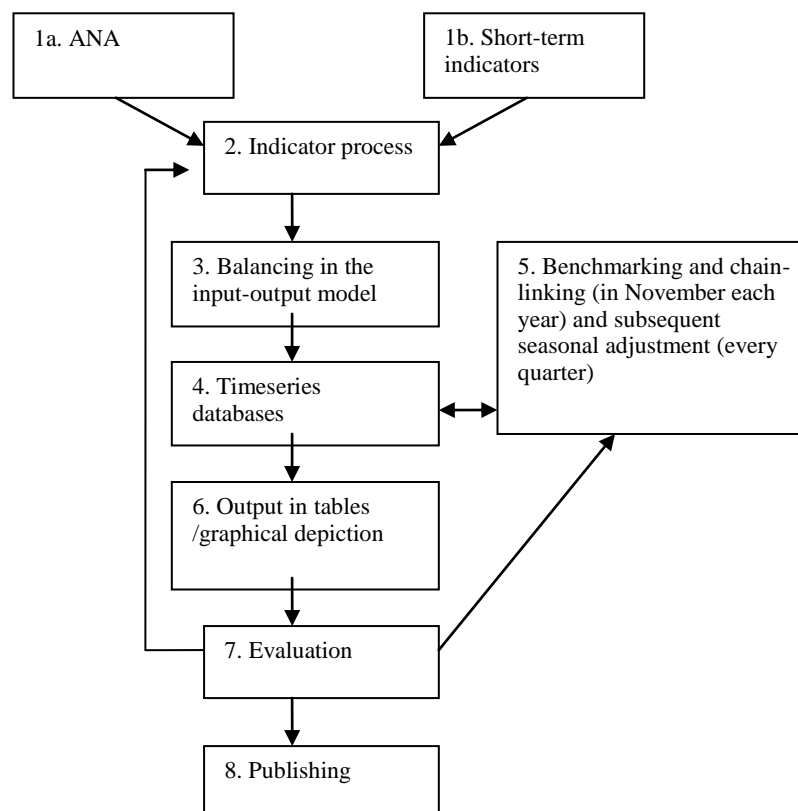
The SUT are compiled simultaneously for current and constant prices in an input-output model programmed in a Massachusetts Institute of Technology developed computer package called "Portable TROLL (Timeshared Reactive OnLine Laboratory)"[9]. The input data used in TROLL is an aggregated version of the latest ANA, supplied in the form of lists, matrices and vectors (from SAS) into TROLL, which is used as a tool to generate equations and to simulate the QNA model. TROLL has an interface to FAME (Forecasting Analysis and Modelling Environment, a software optimized for handling time series data) where the indicator process, short-term statistics and input data are stored. The QNA input-output model with base year 2010 consists of 12 667 equations which defines 4578 endogenous variables and 8089 variables and balancing items calculated from summaries and definitions (based on the structure of the latest final ANA), as well as 2621 exogenous variables compiled by using short-term statistics.

The data is organized according to the following standards;

- Activity classification (sector and industry, NACE rev.2)
- Classification of final consumption expenditure (COICOP (households), COFOG (central and local government), COPNI (NPISHs))
- Classification of gross fixed capital formation by type, by industry and changes in inventories
- Classification of products (CPA)

The purchasing value (market value) of each product flow is decomposed into the following value components:

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[9] http://www.intex.com/troll/introduction.html

Classes	Valuation
10	Basic value
11	Taxes on products
12	Subsidies on products (negative)
14	Retail and wholesale trade and transport margins, basic value
15	Taxes on products related to trade margins (paid by the traders)
16	Subsidies on products related to trade margins (negative, paid to traders)
17	Non-deductable VAT
19	Purchaser's value (19 = 10 +11+12+ 14 + 15 + 16 + 17)

For a summary of published data and level of breakdown, please see chapter 2.2.

Process 1-4 in the figure above describes how the quarterly unadjusted figures are estimated. After all the input in form of short-term statistics needed to update the indicator process is in place, the input-output model takes only a few minutes to finish the full balancing of the accounts in constant and current prices. The results are stored in time series databases (box 4 in figure above), which, among other things, provides the basis for different sets of tables (box 6). The unadjusted figures are seasonally- and calendar adjusted (box 5) using X12-ARIMA (see chapter 3.4). There are several sets of tables (unadjusted and seasonally-adjusted figures); sets for in-house checks and analysis of data, and more aggregated sets of data for publishing. These, alongside the graphical tools of FAME useful for inspecting time series, are used to analyze the results. First at the industry level in close cooperation with the different statistical divisions delivering input, and then at the macroeconomic level in cooperation with the macroeconomic research group who uses the QNA as input in their macroeconomic projections model (KVARTS)[10]. The input-output model and the corresponding listing of tables needs on average to run at least six times for a satisfactory result to be achieved (primary data may need to be adjusted, some input may be lacking or have been wrongly updated in the indicator process, some time is needed to examine the results, etc.), but the results in terms of estimating GDP from the three approaches (production-, expenditure and income, see chapters 4-6) are always consistent by definition. In any given quarter, from the start up of the QNA process to the date of publishing, it takes approximately two-three weeks of work by 12 full time equivalent persons in the Division for National accounts, in addition to the involved parties in other divisions, to compile the QNA. The QNA compilations include preliminary annual estimates. This means that the automatic procedures and the organization of the QNA compilations are highly efficient.

3.1.2. The input-output model

The input-output model programmed in TROLL includes commodity-flow balances, an input-output system for prices and a set of equations for summaries and definitions. The input-output coefficients are calculated from the SUT in the latest ANA and updated every year in November when the ANA for year t-2 are final and published. The variables calculated from the quarterly indicator compilations in FAME are transferred to the input-output model as exogenous variables.

The main exogenous variables in the input-output model are:
- Output in constant prices measured in basic value by industry
- Final consumption expenditure of households in constant prices measured at purchasers' value by consumption group
- Capital formation in current prices (and to a lesser degree in constant prices) at purchasers' value by industry and asset type
- Imports in constant and current prices in CIF (cost-insured freight) value by product
- Exports in constant and current prices in FOB (free on board) value by product

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[10] http://www.ssb.no/english/research_and_analysis/models/

- Intermediate consumption in current prices in central and local government
- Compensation of employees in current prices in central and local government
- Consumption of fixed capital in constant prices in central and local government
- Taxes and subsidies on products in current prices by asset type
- Price indices for resident output delivered to the home market, in basic- or purchasers' value by product
- Price indices on imports in CIF value by product
- Prices indices on exports in purchasers' value (FOB) by product
- Price indices for household final consumption expenditure in purchasers' value by consumption group

In addition to this, all variables for the labour accounts are exogenous, except social contributions which are defined in the model as the difference between compensation of employees and wages and salaries (see chapter 7 for details).

These exogenous variables are calculated in the indicator process, in most cases with the simple extrapolation technique described above. In the case of missing data in an indicator series, an estimate is normally calculated as a weighted average of past growth rates. All indicator formulas contain a correction term, which is used on the basis of other information, knowledge of the fit of the indicator etc. The following items in **constant prices** are endogenous and compiled in the input-output model;

- Intermediate consumption in industries except general government
- An account for non-refundable VAT and taxes and subsidies on products
- Changes in inventories
- Consumption of fixed capital
- Output in the industry *Wholesale and retail trade*

Intermediate consumption for most industries at constant prices (the total except FISIM) is assumed to be a fixed proportion of total output for the relevant industry. The distribution of intermediate consumption (except FISIM) on different products at constant prices is also assumed to be the same as in the base year. The industries' use of FISIM as intermediate consumption equals the growth in total output of FISIM services, calculated as a part of the output in the industry *financial and insurance activities*.

Output in the retail and wholesale trade activities in constant prices is compiled from the use side, based on coefficients from the annual SUT (meaning fixed trade margins).

Changes in inventories are residuals in the commodity-flow balance, and taxes and subsidies on products are calculated with fixed rates from the base year. Changes in VAT rates from one year to another will be adjusted for in the model when current price VAT is estimated.

Consumption of fixed capital in constant prices, needed to estimate output and value added in non-market activities, as well as the capital stock, are calculated according to the perpetual inventory method (PIM) with geometric depreciation rates. This is similar to the PIM in the ANA.

To compile balanced SUT at **current prices** we need price indices on all supply and use categories. These are computed in the model by weighting together product price indices with the input-output coefficients as weights. Each product gets three different price indices, one for domestic output delivered to the home market (to

resident users), a second for imports and a third for exports. The price index for an industry's total output is then calculated as a weighted average of the price indices for the home and export market using the input-output coefficients as weights. The price indices of gross fixed capital formation are calculated in a similar way, using the imports and home market price indices and the input-output coefficients. The price index in basic prices used in intermediate consumption is a weighted average of the price indices on resident output delivered to the home market (to resident users) and imports, with the share of imports as weight. The index is further corrected for taxes and VAT. Price indices on household final consumption expenditure are calculated with detailed information from consumer price indices.

We may express the commodity-flow balance in basic value as:

$$IB_i + \sum_j X_{ij} = \sum_j MB_{ij} + \sum_j CB_{ij} + \sum_k JB_{ik} + AB_i + DS_i + U_i$$

IB_i = Imports, product i

X_{ij} = Output, product i, industry j

MB_{ij} = Intermediate consumption, product i, industry j

CB_{ij} = Private consumption, product i, consumption group j

JB_{ik} = Fixed capital formation, product i, asset type k

AB_i = Exports, product i

DS_i = Changes in inventory, product i

U_i = Residual, product i

We have explicit product information only for exports and imports. For output and intermediate consumption totals are calculated for each industry, consumption is divided into consumption groups and investments by industry and asset type. Only output is measured in basic value, while uses are measured in purchasers' value and imports in CIF-value. By using coefficients (product shares and tax/duty rates) from the latest ANA, a commodity flow balance in basic value for product *i* may still be expressed as:

$$\lambda_{Ii} \times I_i + \sum_j \lambda_{xij} \times X_j = \sum_j \lambda_{Mij} \times M_j + \sum_j \lambda_{Cij} \times C_j + \sum_k \lambda_{Jik} \times J_k + \lambda_{Ai} \times A_i + DS_i + U_i$$

λ_{Ii} = Coefficient expressing imports in basic value in relations to the CIF-value (IB_i / I_i)

I_i = Imports, CIF-value, product i

λ_{xij} = Output-coefficient expressing output of product i, industry j, in basic value as a share of total output in industry j in basic value (X_{ij} / X_j)

X_j = Output, basic value, industry j

λ_{Mij} = Input-coefficient. Intermediate consumption of product i, industry j, in basic value as a share of total intermediate consumption in industry j in purchasers' value (MB_{ij} / M_j)

M_j = Intermediate consumption (excluding electricity, heating- and transport oil), purchasers' value, industry j

λ_{Cij} = Input-coefficient. Consumption of product i, consumption group j, in basic value as a share of total consumption in group j in purchasers' value (CB_{ij} / C_j)

C_j = Private consumption, purchasers' value, consumption group j

λ_{Jik} = Input-coefficient. Capital formation of product i, asset k, in basic value as a share of total capital formation of asset k in purchasers' value excluding VAT (JB_{ik} / J_k)

J_k = Fixed capital formation, purchasers' value excluding VAT, asset k

λ_{Ai} = Input-coefficient. Exports in basic value as a share of FOB-value (AB_i / A_i)

A_i = Exports, purchasers' value (FOB), product i

DS_i = Changes in inventories, basic value, product i

U_i = Residual, basic value, product i

The item changes in inventories is estimated as a balancing item for goods and also many services and includes thus statistical discrepancies.

To balance the GDP in current prices from the income approach, consumption of fixed capital in current prices is estimated by PIM (see above), compensation of employees is estimated in the quarterly labour accounts (see chapter 7), and other taxes and subsidies on production are taken from Government accounts and distributed by industry. Operating surplus in current prices is a residual, used as a balancing item.

This is the general architecture of the QNA compilations. For a detailed description of its components, see chapter 4-6.

3.2. Balancing, benchmarking and other reconciliation procedures

3.2.1. Quarterly GDP balancing procedure

The reconciliation of supply and use is as mentioned a trait of the input-output model and by definition achieved automatically. Automatic balancing is done at a detailed level, as described above, for the constant and current price figures simultaneously.

The balancing of the SUT yields identical results for the three approaches to GDP, but compilation of GDP in the QNA in Norway is based mainly on the production approach, as changes in inventories and operating surplus are residuals in the expenditure and income approach, respectively. The residuals are interpreted and assessments are made based on the economic sense and meaningfulness of these components. The seasonal adjusted figures are balanced in the sense that the different approaches to GDP yields the same result. This is achieved by seasonally adjusting the different components at the same level as the published unadjusted figures, with the exception of the residual changes in inventories/statistical discrepancies which is used as a balancing item. For more information on the seasonal adjustment routines, see chapter 3.4.

Tables and graphical depictions of the time series are compiled for every component of supply and use at the most detailed level every time the model is run, and tables are distributed for checks both internally in the Division for National accounts as well as to other divisions (suppliers of basic data). National accountants focus on the plausibility of the price and volume changes in the indicators with support from the primary data suppliers, with continuous editing throughout the compilation period due to updated data, additional information, knowledge of the direction of revisions in indicators and checks of the plausibility of estimates in connection with other variables (e.g. operating surplus, wage quotas) etc. Meetings are held with the different statistical divisions, and a final meeting in which emphasis is on the macroeconomic result (mainly seasonally-

adjusted volume figures) both at present and over time, as well as any peculiarities at a detailed level, is held with the Research Department.

3.2.2. Benchmarking of QNA and ANA

Preliminary annual national accounts are simply the sum of the quarterly figures. The final ANA are compiled in greater detail, with final and more reliable information available. To assure consistency and improve the quality of the quarterly figures, the QNA is benchmarked against the final ANA every year t in November when year t-2 is final. The benchmarking is done by implementing the new yearly figures while at the same time preserving the quarterly pattern and avoiding breaks from the 4th quarter of one year to the 1st quarter of the next, achieved by applying a mathematical technique known as the proportional Denton method.

Benchmarking is necessary in this case because the annual data represents more reliable information, while the quarterly figures are the only available information on short-term movements. The goal is to make the sum of the quarters in the new QNA series equal to the final ANA figure, while keeping the quarterly pattern as close as possible to the original QNA series.

For optimal movement preservation there are several different Denton methods to choose from, the one chosen in the Norwegian QNA compilations is the Min D4 version (basic version)[11]. It is a method that *minimizes the square sum of the absolute differences in the relative adjustments from one quarter to the next*, given that the sum of the quarters of flow series should add up to the annual data and that the quarterly value of the quarter prior to the first quarter to be revised is given. If the original value is zero, a method that minimizes the square sum of absolute differences of the absolute adjustments in two neighbouring quarters has to be chosen instead (Min D1). The main method (Min D4), and given the restrictions, is the minimization of the expression:

$$D4 = \sum_{i=1}^{n} \left[\Delta\left((Y_i - X_i)/X_i\right)\right]^2 \quad = \sum_{i=1}^{n} \left[Y_i/X_i - Y_{i-1}/X_{i-1}\right]^2$$

Y is the adjusted quarterly value and X the original. For certain series, where the least-square based methods yields unsatisfactory results, simple pro rata adjustments are used instead. The benchmarking procedure involves QNA time-series for five years at the time.

Seasonal- and calendar adjustment is the last step, and applied to the benchmarked (and chain-linked) quarterly series, with no restriction to sum up to the annual figures (i.e. not benchmarked to the unadjusted annual figures). Balanced seasonal adjusted data within each quarter is achieved by using the residuals as balancing items. This implies that the adjusted data is balanced in the sense of providing a single estimate of GDP, see chapter 3.4.

3.2.3. Other reconciliations of QNA different from balancing and benchmarking

The labour accounts are an integrated part of the QNA and no checks needs to be implemented to assure consistency between the different parts. E.g. checks of employment with compensation of employees; the latter is a product of full-time equivalent employment times wages and salaries per full-time equivalent person, plus a fixed rate for employers social contributions, for the majority of industries. The exception is general government, where compensation of employees and wages and salaries are exogenous and provided by public finance statistics, and where full-time equivalent employees is equal to wages and salaries divided by

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[11] See for example chapter 6 in the quarterly national accounts manual of IMF (Bloem et al., 2001).

wages and salaries per full-time equivalent person, see chapter 6.1 and 7. Plausibility checks are in order, and are performed by national accountants involved in the compilations in cooperation with the divisions supplying the basic data.

The relevant QNA results are implemented in the quarterly and preliminary annual non-financial accounts. Imports and exports of goods and services in the QNA and the successive release of the BoP are also fully consistent.

3.2.4. Amount of estimation in various releases

Estimates for a given quarter, aside from revisions in preceding quarters when a new quarter is calculated, are only published once. Due to the timeliness of the quarterly estimates (+/- 50 days), flash estimates[12] are not compiled. For a detailed overview of the sources available, see the appendix.

3.3. Volume estimates

3.3.1. General volume policy

To evaluate 'real' economic growth, analysts need to strip the growth in economic variables of effects of price change, so national accounts current price data needs to be decomposed into volume and price components for most variables. Measurement of volume change can be achieved by holding prices constant in a given base period, known as a fixed-based volume measure, or linking together figures with different base periods to capture the influence on volume of changes in relative prices, known as chain-linked volume measures. Norway was among the first countries to implement chain-linking in the Annual National Accounts (1990).

Supply and use tables in the QNA are calculated in current and constant prices. Current prices refer to the prices of the current quarter, while constant prices refer to the average prices of the base year. An updated reference year is introduced every year in chained indices, and the reference year/base year is the final ANA. The QNA model is compiled on the basis of the latest ANA and preliminary ANA are the sum of the quarterly figures, with no adjustments made for changes in relative prices from the base year. Hence, the quarterly figures from the base year and onwards are calculated with a fixed-base period.

This is not the recommended approach; prices for a given year should be expressed in the prices of the previous year because figures derived from a fixed base are less reliable as the period of measurement moves away from the base year. However, the gain to be made from updating relative prices for every year in the preliminary estimates from QNA has been found to not outweigh the cost of establishing new weights. In addition, the additivity property of fixed price estimates is considered desirable. Revisions indicate that the changes in relative prices are not so large as to significantly impact the main aggregates, with the possible exception of oil-and gas extraction. However, the fluctuations here could easily also affect weights significantly in a much shorter time, hence the optimal weight period could shift from quarter to quarter[13].

In the QNA, data for constant prices are created either in the indicator system or in the input-output model, by dividing series in current prices with price indices at the most detailed level, or by using quantity indicator based series which are then multiplied with the relevant price indices to achieve series in current prices. Series

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[12] Flash estimates are early or advance estimates, usually based partly or exclusively on forecasts.

[13] When price and volume per relatives change monotonically, frequent linking is most beneficial. And conversely, when price and volume relatives are volatile, frequent linking is less beneficial (chained series are subject to drift), see for example chapter 9 in IMF (Bloem et. al 2001) for a thorough explanation.

in constant prices are Laspeyres volume indices, and the corresponding prices are Paasche price indices (an acceptable alternative to Fischer indices).

Paasche price index;

$$P^{FB}{}_{q,t} = \frac{\sum\limits_{i=1}^{n} p_i^{q,t} q_i^{q,t}}{\sum\limits_{i=1}^{n} p_i^{0} q_i^{q,t}}$$

p_i^0 is the quantity-weighted annual average (arithmetic) price of the i^th product of n products in each quarter of period 0, and $q_i^{q,t}$ and $p_i^{q,t}$ is the quantity and price of item i in quarter q in year t.

Laspeyres volume index;

$$L^{FB}{}_{q,t} = \frac{\sum\limits_{i=1}^{n} p_i^{0} q_i^{q,t}}{\sum\limits_{i=1}^{n} p_i^{0} q_i^{0}}$$

p_i^0 and q_i^0 are quantity-weighted annual average price and average quantities of the i^th product of n products in the quarters of period 0. The denominator express the price value at period 0 and the numerator the value in quarter q in year t in prices of period 0. Note that in a fixed-base Laspeyres index the weight period coincides with the base period. Applying this technique to a SUT framework is convenient, since balancing at constant and current prices lends itself to construction of Laspeyres type volume indices.

With a fixed-base period, figures are additive. Chain-linking on the other hand, implies not having a fixed base (or weight) period, but chaining together developments measured in figures with different base periods. The purpose of chain-linked volume measures is taking into account the difference in relative prices from period to period. This means that chain-linked series do not satisfy any additivity constraint. Basic chain-linking of annual data is illustrated in box 3.1.

Box 3.1. Basic example of chain-linking.

		Household final consumption expenditure (total)	Household consumption of goods	Household consumption of services	Household consumption abroad	Non-resident con sumption in Norway
Current price estimates	2009	979235	495674	452357	57328	-26124
	2010	1040627	532385	474046	62645	-28449
	2011	1076920	542760	494385	69522	-29747
	2012	1120327	551285	524971	75729	-31659
T-1 prices	2009					
	2010	1018783	521628	460367	64516	-27728
	2011	1067304	541158	486576	68563	-28993
	2012	1109433	554323	509682	76268	-30841
y/y Laspeyres volume index	2009					
	2010	1,040	1,052	1,018	1,125	1,061
	2011	1,026	1,016	1,026	1,094	1,019
	2012	1,030	1,021	1,031	1,097	1,037
Chain volume estimates reference 2011	2009	1009243	507393	473274	56444	-27500
	2010	1050003	533961	481654	63521	-29189
	2011	1076920	542760	494385	69522	-29747
	2012	1109433	554323	509682	76268	-30841
Implicit price deflator (IPD), reference 2011	2009	0,970	0,977	0,956	1,016	0,950
	2010	0,991	0,997	0,984	0,986	0,975
	2011	1	1	1	1	1
	2012	1,010	0,995	1,030	0,993	1,027

The table shows households final consumption expenditure and its components in current prices, in t-1 prices (in the prices of the previous year), annual volume change and chain-linked volumes with reference 2011. The annual volume change is the accounts in t-1 prices divided by the current price estimate in t-1. Chain-linked volume series are then constructed by setting a reference year equal to the current price estimate (2011 in the table above) and linking together the volume change; the level in 2011 is divided by the annual volume change from 2010 to 2011, the resulting chained volume estimate in 2010 is then divided by the annual volume change from 2009 to 2010 to get the 2009 estimate and so on. To construct the series in the years after the reference year, the level is multiplied by the volume change. Note that for figures for 2013 in this example, where the reference year equals the base year in the input-output model, the volume estimates would be in t-2 prices, and the 2013 estimates would thus be fixed-base volume measures and not chain-linked ones in t-1 prices. Also note the chain discrepancies arising prior to the base year (reference year in this case) when you sum the components of household final consumption expenditures in the chain volume estimates, versus the additivity of the components which is present in t-1 estimates. The implicit price deflator is simply the chain-linked estimates divided by the current price estimates. The data in t-1 prices is the current price estimate deflated by the implicit price deflator (IPD) times the IPD in t-1, which express the series in the prices of the previous year. See box 3.2 for chain-linking of quarterly data with the annual overlap method by annual price scaling, using the implicit price deflator.

There are several ways to chain-link quarterly data; the technique chosen for the QNA is the annual overlap method, where there is no need to further adjust the resulting quarterly figures to the annual figures with benchmarking. When using annual overlap, the quarterly estimates are compiled with the weighted annual average prices of the previous year, and subsequently, the quarterly volume indices with different base and reference year are linked using the corresponding annual indices to scale the quarterly data up or down. This ensures that the figures will be equal to the independently derived annual chain-linked data. The short-term link in an annually chain-linked quarterly index:

$$L_{q,t} = \frac{\sum\limits_{i=1}^{n} p_i^{t-1} q_i^{q,t}}{\sum\limits_{i=1}^{n} p_i^{t-1} q_i^{t-1}}$$

p_i^{t-1} is the quantity-weighted average of the price of product i in the quarters of year t-1, and q_i^{t-1} the average quantity of product i in period t-1, measuring the volume change from the average of year t-1 to quarter q in year t. An example of how to construct chain-linked estimates (and how to change reference year) using annual overlap is given in box 3.2.

QNA volume figures are published (in monetary terms) with reference period equal to the latest ANA (which, as already noted, is also the base year for the quarters following the latest final ANA). Although additivity does not apply for figures in the time series preceding the base year, focus is always on the latest periods in the QNA release (which has a fixed-base period), and the lack of additivity is made clear in a footnote in all relevant time series available online.

Contributions to growth in quarter q from component xi in the aggregate X, in year t from the previous quarter in year t, in a fixed-base volume series is calculated simply as;

$$\text{Contribution}(x_i, X)_{FB}^q = \frac{\left(x_i^{q,t} - x_i^{q-1,t}\right)}{X^{q-1,t}}$$

Even though calculating contributions to growth in chain-linked series, when additivity is lost, is more complex, there are different approaches available. The Additive Volume Data (AVD)-method is shown in box 3.3.

Box 3.2 Chain-linking and re-referencing quarterly data using the annual overlap method (by annual price scaling). Household final consumption expenditure

	Current price estimates	IPD, 2011=1	Annual IPD of total **in t-1**(from box 3.1) 2011=1	Δ IPD of total(in t-1) (from old reference year)	Estimates in t-1 prices = X	Chain - linked estimates reference 2011	Chain-linked estimates reference 2010
09:1	226362	0,960	0,948	1,046	223531	235836	233730
09:2	242952	0,971	0,948	1,046	237155	250210	247976
09:3	250185	0,974	0,948	1,046	243492	256896	254602
09:4	259736	0,975	0,948	1,046	252405	266300	263922
10:1	248481	0,985	0,970	1,021	244792	252293	250040
10:2	253414	0,989	0,970	1,021	248570	256187	253899
10:3	262962	0,989	0,970	1,021	257981	265887	263513
10:4	275770	1,000	0,970	1,021	267439	275635	273174
11:1	254042	0,998	0,991	1,000	252211	254483	252211
11:2	269232	1,003	0,991	1,000	265989	268386	265989
11:3	272814	0,998	0,991	1,000	270996	273438	270996
11:4	280832	1,001	0,991	1,000	278107	280613	278107
12:1	265763	1,004	1,000	1,009	264603	264603	262240
12:2	277212	1,011	1,000	1,009	274302	274302	271853
12:3	284428	1,009	1,000	1,009	281968	281968	279450
12:4	292924	1,015	1,000	1,009	288560	288560	285983

The table shows household final consumption expenditure in current prices, in t-1 prices and the chain-linked series referenced to 2011 and 2010 respectively, using the annual overlap method (with information from the annual implicit price deflator). The quarterly current price estimates are deflated with the implicit price deflator (IPD), where 2011=1 (current price estimates/chain volume measures=IPD), and multiplied by the average *annual* IPD of the previous year (annual IPD of total in t-1 prices, as shown in box 3.1.) to form estimates in t-1 prices. To chain the estimates in 2011, the series in t-1 prices are multiplied with the annual IPD of year t-1 (column four), which is to say that we scale the measures at average prices of the previous year, to the average price level of 2011.

To chain estimates in 2010 we simply use the information provided for the annual IPD in column four to do exactly the same, but by using the growth rate of the development in the annual IPD in t-1 from the old reference year, shown in column five (0,991/0,970=1,021 and 0,991/0,948=1,046 and so on). Hence, with volume estimates and current price figures available, users may change reference year of the quarterly series if they wish to do so. Note that the sum of the quarters is equal to the independently derived annual estimates such that no further benchmarking is necessary.

Box 3.3 Contributions to growth in chain-linked estimates

In order to get around the problem of non-additivity in chain-linked series, it is possible to exploit the additivity present when series are presented in previous years average prices (as shown in box 3.1). While calculating contributions to growth is quite simple for the annual estimates following this logic, it becomes more complex when calculating contributions to growth in quarterly series. There are different variants of the additive volume data (AVD) method depending on which growth rates are used; in order to look at contributions to y/y growth rates one need to take into account the difference in annual relative prices from t-1 and t-2, weighted by the respective quarterly and annual volume shares of the components in the aggregate. This is a special case of the calculations for contributions to q/q growth, in which this difference in annual price relatives has to be adjusted for only over the link period (1st quarter, in which the previous quarter is in t-1). The formula for contributions to y/y growth in chain-linked estimates (with the last term in double brackets being the adjustment needed for y/y growth contributions, as well as the link period in q/q growth contributions (in which q-4 is replaced by q4, t-1));

$$\mathbf{AVD(x_i, X)}_{q,q-4} = \left(\frac{\mathbf{x}^{q}_{i,CV} - \mathbf{x}^{q-4}_{i,CV}}{\mathbf{X}^{q-4}_{CV}} \right) * \left(\frac{\mathbf{Px}^{t-1}_i}{\mathbf{PX}^{t-1}} \right) +$$

$$\left\{ \left(\frac{\mathbf{x}^{q-4}_{i,CV}}{\mathbf{X}^{q-4}_{CV}} - \frac{\mathbf{x}^{t-1}_{i,CV}}{\mathbf{X}^{t-1}_{CV}} \right) * \left(\frac{\mathbf{Px}^{t-1}_i}{\mathbf{PX}^{t-1}} - \frac{\mathbf{Px}^{t-2}_i}{\mathbf{PX}^{t-2}} \right) \right\}$$

Subscript i refers to the ith component of the aggregate X, CV is chain volume estimate, Pxi is the implicit price deflator (IPD) of component i (in year t-1 and t-2), and PX the IPD of the aggregate. The table below shows the contributions to growth in gross value added of the components of the aggregate *petroleum activities and ocean transport*, calculated according to the formula above and compared to the contributions from a 'simplistic' calculation (as for fixed price estimates, ignoring the chain discrepancies).

| | Gross value added, y/y growth rates | | Contributions to growth, from the same quarter in the previous year, percentage points | | | | | |
| | Petroleum activities and ocean transport (total) | | Petroleum extraction including services | | Transport via pipelines | | Ocean transport | |
	SUM AVD	SUM SIMPLISTIC	AVD	SIMPLISTIC	AVD	SIMPLISTIC	AVD	SIMPLISTIC
07:01	-4,5	-4,9	-3,8	-3,8	0,0	0,0	-0,9	-1,1
07:02	-6,2	-6,5	-5,6	-5,7	0,2	0,1	-0,7	-1,1
07:03	-5,9	-6,2	-5,2	-5,2	0,1	0,1	-0,9	-1,1
07:04	-2,3	-2,7	-2,0	-2,1	0,5	0,3	-0,7	-0,9
08:01	-4,9	-5,1	-3,1	-3,1	0,3	0,2	-2,0	-2,3
08:02	-4,5	-4,7	-1,7	-1,7	0,1	0,1	-2,9	-3,0
08:03	-6,7	-6,9	-4,2	-4,3	-0,3	-0,2	-2,3	-2,4
08:04	-2,7	-2,9	-0,3	-0,3	0,0	0,0	-2,4	-2,6
09:01	3,0	2,9	3,0	3,0	0,0	0,0	0,0	-0,1
09:02	-3,3	-3,4	-2,7	-2,8	-0,2	-0,2	-0,6	-0,4
09:03	-0,7	-0,6	-0,5	-0,6	0,1	0,2	-0,3	-0,2
09:04	-5,3	-5,3	-4,8	-4,9	-0,2	-0,1	-0,3	-0,2
10:01	-3,5	-3,8	-3,8	-3,9	0,1	0,1	0,1	0,0
10:02	0,4	0,0	-0,7	-0,7	0,4	0,2	0,7	0,5
10:03	-12,5	-13,0	-12,6	-13,1	-0,4	-0,3	0,5	0,4
10:04	-0,8	-1,1	-1,6	-1,7	0,3	0,2	0,4	0,3
11:01	-4,1	-4,3	-4,5	-4,6	-0,2	-0,2	0,6	0,5
11:02	-9,9	-10,2	-10,0	-10,2	-0,7	-0,5	0,8	0,5
11:03	7,8	7,6	6,7	6,8	0,3	0,3	0,8	0,5
11:04	-4,1	-4,3	-4,4	-4,5	-0,3	-0,3	0,6	0,4

The chain-linked *annual* volume figures are published with reference year based on Eurostat recommendations. Due to the implementation of NACE rev.2 in 2011, the change of reference year from 2000 to 2005 was implemented in 2011 instead of 2009, as recommended by Eurostat. Also, as already mentioned, the annual figures for the years succeeding the base year are simply the sum of the quarters from QNA.

3.3.2. Chain-linking and benchmarking

Series in both constant and current prices are benchmarked to final annual national accounts; the annual overlap method described above assures that chain-linked quarterly volume series will have the same annual value as the chain-linked Annual National Account series so that no further benchmarking is necessary.

3.3.3. Chain-linking and seasonal adjustment

Seasonal adjustment (henceforth; seasonal adjustment is used to describe both calendar and seasonal adjustment) is the last step of the compilation process when benchmarking and subsequently chaining quarterly figures, and hence seasonally adjusted series at previous year's prices are not produced, only chained quarterly figures are. Since the same chaining-policy applies to seasonally adjusted series, a fixed base period applies to the volume series from the latest ANA year. The figures are adjusted by indirect seasonal adjustment, i.e. the aggregate is a sum of its components for this period and hence additivity is present from the base year and onwards. It follows that calculating contributions to growth is straightforward.

After the implementation of the main revision in 2011, an effort was made to limit the amount of revisions in seasonally adjusted time series for periods preceding the base year. This was done by seasonally adjusting the aggregates directly from 1978 to the year before the base year, but by using seasonal factors from the indirect method in order to avoid a new pattern in the new series. The seasonal adjustment factors for the aggregates are thus kept constant from the year prior to the base year (Brathaug and Rodriquez 2012).

3.4. Seasonal adjustment and working day correction

3.4.1. Policy for seasonal adjustment

Quarterly data is often subject to calendar and seasonal variations due to events such as seasonal climate conditions, the placement of Easter and holidays etc. To ease quarter-to-quarter comparability, a process of calendar and seasonal adjustments is needed to interpret the underlying economic activity. The seasonal adjustment tool in use is the US Bureau of Census developed X-12-ARIMA.

Several hundreds of series are seasonally adjusted every quarter, first at a disaggregated level and then summed up to the main aggregates (indirect approach) in current and constant prices for figures dating back to the year preceding the base year (e.g. from Q1 2008 for quarters estimated with base year 2009). For all quarters succeeding the base year we have figures that are additive. Chaining applies to all quarters prior to the base year, and thus additivity is lost. For series preceding the year prior to the base year, a direct seasonal adjustment method is used, which implies that the aggregates have been adjusted directly and not as a sum of its components. The seasonal adjusted time series are thus kept constant for this period. When a new base year is established, we use identical seasonal adjustment factors as before which means that changes in the seasonally-adjusted data are only due to changes in the unadjusted data. The seasonal adjusted time series are thus kept constant for this period. Information from the entire period of the time series is used to estimate seasonal adjustment factors, but this information is only used on the series starting with the first quarter of the year prior to the base year. Furthermore, the series of gross value added are adjusted directly and not as the difference between production and intermediate consumption, and household final consumption expenditure on goods are adjusted by applying the seasonal

factors that are estimated for the monthly Index of household consumption of goods (see chapter 5.1 for details).

Calendar adjustments are performed on all series showing significant and plausible calendar effects. Correction for moving holidays are implemented by an automatic correction procedure in X12-ARIMA based on the default option of US holidays, with the exception of households final consumption expenditure which uses the Norwegian calendar. Outliers are detected automatically and removed before seasonal adjustment is carried out and then reintroduced into the seasonally-adjusted data. Model selection (and filters, outliers and regression parameters) is primarily automatic and continuous (concurrent adjustment[14]). A manual decomposition scheme is adopted, based on a graphical inspection of the series, where additive decomposition is used for series with negative values, otherwise multiplicative. Seasonally adjusted series are not required to sum up to the annual unadjusted data. However, supply equals use also in seasonally-adjusted figures; changes in stocks/statistical discrepancies are treated as residuals (balancing items). For quality measures of the seasonal adjustment and an up-to -date evaluation and summary of the indicators, please see paragraph 5.2, under the heading 'On seasonal adjustment of the quarterly national accounts' accompanying the QNA press release
(http://www.ssb.no/a/english/kortnavn/knr_en/sesongjustering_en.html).

It is worth noting that the focus is on constant price figures in the seasonally adjusted data. Volume figures are seasonally adjusted and inspected, and the calendar- and seasonal adjustment factors are then applied to the current price estimates. The price indices are residuals, such that the relationship Δ value/Δ volume= Δ price is retained (as in unadjusted data).

The seasonally adjusted data is released at the same time as the unadjusted data, and in accordance with the aforementioned release time table (chapter 2). As a result of the method adopted and described above, seasonally-adjusted figures are revised back to the year prior to the base year for each QNA release. A table indicating the expected growth rate revisions in main aggregates from the previous period in initial and final published data is available under paragraph 4.1 in 'On seasonal adjustment of the quarterly national accounts' in the QNA press release. The press release is almost entirely devoted to q/q growth and contributions to q/q growth from seasonally adjusted constant price figures, but both unadjusted and seasonally adjusted constant and current price estimates, as well as price indices, for contents described under chapter 2.2, are made available. The most popular data is readily available in html and csv format, as well as exhaustive time series for all variables in Statistics Norway's StatBank. Also note that the *annual* figures presented in the tables alongside quarterly seasonally- and calendar adjusted figures are unadjusted figures. Although consistency between unadjusted and adjusted annual data is not imposed, they are presented as such to ease public dissemination. The discrepancies between unadjusted and adjusted annual figures are of minor magnitude.

3.4.2. Policy for working-day correction
Working-day adjustment consists of calculating the QNA as if each quarter contained the same number of working days. Working-day adjusted series, as well as trend estimates, are not published separately, but are made as part of the seasonal adjustment routine.

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[14] Concurrent adjustment is a C-method (to be avoided) in the ESS guidelines on seasonal adjustment, but is currently a part of the overall seasonal adjustment practise of Statistics Norway.

4. GDP components: the production approach

Gross domestic product (GDP)
GDP is an indicator for total value added in a country, and is also an expression for gross income generated from domestic production. GDP is measured in market prices, and is defined and compiled from three different approaches.

In this chapter, the production approach is covered, where GDP is calculated as:
= Output (basic price) - Intermediate consumption (purchaser price) + Taxes on products - Subsidies on products
= Total value added (basic price) + Taxes on products - Subsidies on products

There are no residual items in the GDP calculations from the production approach. The GDP estimates are consistent by definition in the QNA model, where changes in inventories/statistical discrepancies and operating surplus are residuals in the expenditure and income approach, respectively. However, the GDP estimate is compiled through careful evaluation of components in all three approaches, and through a reconciliation of estimates in the production and expenditure approach in particular.

In general, the estimates for gross capital formation (due to limited quarterly sources) and exports and imports in the expenditure approach have shown to be less reliable than the gross value added estimates at an aggregate level from the production approach. Household final consumption expenditure and data for general government are notable exceptions, as preliminary estimates have shown to be resilient to revisions[15].

4.1. Gross value added, including industry breakdowns (but excluding FISIM)

A broad description of source statistics and methods by industry breakdown is provided below, distinguishing between market and non-market producers. More details on the source statistics is provided in the appendix.

4.1.1. Market producing industries
Value added in market producing industries is simply calculated as output (basic prices) less intermediate consumption (purchasers' prices).

Output in constant prices is for the most part calculated by extrapolating the latest final ANA value with the growth rate of the corresponding volume indicator from short-term statistics, or value indicator deflated by a suitable price index to produce volume figures (or weighted growth rate of several indicators). There is no explicit method in use to assure that the indicator and the variable it is projecting are in fact perfectly correlated, but the preliminary QNA figures are always compared with the final results of the ANA to give an indication of the quality of the indicator. Correction factors are used when other information available of the development in a variable contradicts the indicator, or the person in charge of the short-term statistics behind the indicator has information that justifies deviations from the statistics, either due to lack of sufficient data or suspected wrongful raw data at time of QNA compilations. Close cooperation with the different statistical divisions is an important trait of the Norwegian QNA compilation process. We have indicators for two of three components (price indices, volume estimates, current price estimates), where the third one is a residual. The most common is that we have price indices and volume indicators, with current price value being calculated residually. If an indicator is based on current price estimates, the value is deflated with a suitable price index in the indicator process and fed into the input-

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[15] Revision triangles for quarterly and annual estimates at a detailed level are made as part of the QNA compilation process.

output model as a volume estimate. In the input-output model it is assigned a price index for the industry's total output calculated as a weighted average of the price indices for the home and export market (at product level) using the input-output coefficients from the latest ANA as weights (see chapter 3.1.1).

Intermediate consumption is mainly calculated as a fixed share of output in volume in the industries due to a lack of data for the non-financial market sector. Intermediate consumption excluding FISIM is divided into four groups, out of consideration for the macroeconomic models used by the Research Department; electricity, heating oils, transport oils, and a last group consisting of the remaining relevant products, all made up of their respective shares in latest ANA. The constant price figures are coupled with weighted price indices in the input-output model to create current price estimates.

NACE A Agriculture, forestry and fishing
Agriculture; Detailed information on a range of products, volume and price estimates, are obtained from several sources. The Budgeting Committee for Agriculture has yearly data at a detailed product level, and where the estimates are assigned to the respective quarters the products are harvested. TINE SA (Norway's largest producer of dairy products) provides monthly indicators on dairy products. The Norwegian Meat Cooperative delivers monthly indicators on meat and poultry production. For agriculture there is also detailed volume information available for intermediate consumption. The price indices of domestic output of agricultural goods are detailed annual indices compiled by Budgeting Committee for Agriculture.

For *forestry*, output is extrapolated using the volume estimates from the quarterly commercial roundwood removal statistic. A quarterly producer price index for timber extraction from the Division for Natural resources and environmental statistics is the main price index used.

For *fisheries*, quarterly volume and price estimates are obtained from the Directorate of fisheries, whereas exports of salmon and trout, in volume and value, from Statistics Norway's trade statistics, are the main indicators in *aquaculture*.

NACE B. Mining and quarrying
Mining and quarrying: see manufacturing.

Services incidental to oil and gas extraction: indices of production in volume, hours worked, used in combination with monthly turnover statistics, and a producer price index for the industry from the Division for Price statistics. *Extraction of crude oil and natural gas*; volume figures for extraction of crude oil and natural gas and natural gas liquids compiled by the Division for Manufacturing and R&D statistics with information from the Norwegian Petroleum Directorate. Corresponding producer price indices and export price indices (unit prices).

NACE C Manufacturing
In manufacturing, output is estimated using industry specific quarterly volume indices from the monthly Index of industrial production from the Division for Manufacturing and R&D statistics, and production price indices from the Division for Price statistics.

NACE D Electricity, gas, steam and air conditioning supply
For electricity, gas, steam and air conditioning supply, monthly electricity statistics from the Division for Energy and environmental statistics is used, where the production of electricity inflated (mainly) with a weighted price index for electricity consumption of main recipients (households, industries, other and energy intensive manufacturing). The output in the remaining industries is inflated

with a mix of price indices, mainly cost price indices from the labour accounts of wages and salaries per hours worked.

NACE E. Water supply, sewage, waste management and remediation services
Bimonthly turnover statistics based on the VAT -register from the Division for Manufacturing and R&D statistics, and related consumer price indices (CPI).

NACE F Construction
Output in volume in construction is compiled using the quarterly Production index for construction. Output is inflated with a construction cost index, based on weighted monthly building cost indices for different kinds of housing and road constructions. Output in volume of development of building projects are extrapolated by hours worked from the labour accounts and inflated (mainly) with the corresponding cost price index.

NACE G Wholesale and retail trade; repair of motor vehicles and motorcycles
Output in current and constant prices for *wholesale and retail trade* are calculated in the input-output model from the use (expenditure) side with weights (trade margin share) from the base year, as the sum of trade margins for all use categories separated on products (from intermediate consumption, final consumption expenditures, gross fixed capital formation and exports). Output in *repair of motor vehicles and motorcycles* is extrapolated by bimonthly turnover statistics for maintenance and repair of motor vehicles, deflated with a corresponding CPI.

NACE H. Transportation and storage
Rail- (freight and passenger) and land passenger transport; A mix of volume and turnover indicators. For railway freight transportation, volume is based on information on tonne-kilometres from CargoNet (main freight transportation company) and corresponding turnover. For railway transportation with passengers, volume (kilometres) and turnover is supplied for NSB (partly state-owned railway service), and the Airport Express Train. For road transportation of passengers with bus, taxis, tramways and subway, the number of kilometres driven for each type of vehicle is supplied from the Division for transport, tourism and ICT, and coupled with corresponding CPIs.

Freight road transport; Output is extrapolated using quarterly turnover statistics based on the VAT-register, and a corresponding producer price index from the Division for transport, tourism and ICT statistics.

Transport via pipelines; Transport margins are extrapolated with the production index series for oil and gas extraction from the Division for Manufacturing and R&D, output is balanced in the input-output model as equal to the export (use) of natural gas (and where export of this product is from the output compilations in the industry *extraction of crude oil and natural gas*)

Sea and coastal transport abroad (passenger and freight); Information from external trade statistics on international trade in services on exports of ocean freight and passenger transport services in current prices, and a producer price index for sea transport from the Division for transport, tourism and ICT statistics.

*Sea and coastal transport domestic (passenger and freight);*Output is extrapolated with quarterly turnover statistics and a producer price index from the Division for transport, tourism and ICT statistics for both passenger and freight transportation.

Air transport; Volume is compiled using quarterly development of number of passengers on domestic flights from Avinor (state-owned airport operator). Inflated (mainly) by CPI for passenger air transport.

Warehousing and support activities for transportation; Volume compiled using quarterly indicators on cargo loads from public and private ports, aviation statistics on number of flights and passengers from Avinor (state-owned airport operator), as well as quarterly turnover statistics for service activities incidental to transportation not elsewhere classified. Output is deflated with producer price indices.

Postal and courier activities; Output in volume developed by information from quarterly reports from Norway Post (Norway Post covers the post office network and daily postal distribution to the entire Norwegian populace) of volume development of letters and parcels, inflated with a producer price index for the industry from the Division for transport, tourism and ICT statistics.

NACE I Accommodation and food service activities
Quarterly turnover statistics based on the VAT-register from the Division for transport, tourism and ICT statistics for bars and restaurants, cantinas and hotels, as well as accommodation statistics. Output is deflated with related consumer price indices.

NACE J Information and communication
Publishing activities; the largest part of the output in the industry is assigned an indicator of hours worked from the labour accounts, with a corresponding cost price index based on wages and salaries per hours worked. The remaining of the output in the industry uses quarterly turnover statistics, for movie and television production and radio and television broadcasting, with a corresponding CPI for cultural services. *Telecommunications* uses quarterly turnover statistics for telecommunication (total industry), and a corresponding CPI. *Information and communication services* are assigned two quarterly turnover statistics, deflated by a cost price index for wages and salaries per hours worked in the industry from the labour accounts.

NACE K. Financial and insurance activities
FISIM; see chapter 4.2. *Banking services*; quarterly statistics for banks and financial institutions from the Division for Financial markets statistics, deflated with CPI for financial services excluding insurance. *Insurance services*; an indicator for net insurance premiums (life- and non-life insurance) from quarterly insurance statistics from the Division for Financial markets statistics and hours worked in the industry from the labour accounts. *Other financial services* are extrapolated using hours worked for the industry (from the labour accounts) with a corresponding CPI.

NACE L Real estate activities
Real estate activities; Quarterly turnover statistics based on the VAT-register from the Division for Construction and service statistics, and a cost price index of wages and salaries per hours worked in the industry from the labour accounts.

Dwelling services of owner-occupiers; The starting point is the housing stock in t-1, which is added figures for newly completed buildings (for households) compiled by he Division for Construction and service statistics, and with an added correction term for quality improvements. Inflated with CPIs for rent and imputed rent (with weights from the base year of their respective shares).

Output in *Dwellings, renting services of residential and non-residential property* is given the same development in volume as dwelling services of owner-occupiers, and inflated by CPI for paid rent in household dwellings.

NACE M and N Professional, scientific and technical activities, and administrative and support service activities
Quarterly turnover statistics based on the VAT-register from the Division for Construction and service statistics and related producer price indices, as well as

cost price indices from the quarterly labour accounts for certain parts of output (in lack of producer price indices).

NACE P Education
Hours worked in the industry from the quarterly labour accounts, and a corresponding CPI.

NACE Q Human health and social work activities
Human health activities; Annual estimate of grants and social benefits in kind from the central government accounts (including the National Insurance Scheme), in addition to social benefits in kind from the accounts of the central government run health establishments, dispersed evenly on quarters, and deflated with CPI for health and social work services.

Social work activities; Market producers within social work consists mainly of kindergartens. Quarterly volume indicator for amount of hours spent in child care for children in private kindergartens, and social benefits in kind paid by local government for services from privately owned kindergartens (current price estimate).

NACE R Arts, entertainment and recreation
A mix of grants for artistic purposes from the central government accounts, quarterly turnover from Norsk Tipping and Norsk Rikstoto (state-owned companies for money games), and hours worked from the labour accounts. Price indices are mainly a cost price index for the industry from the labour accounts, and CPIs for relevant parts of output where available.

NACE S Other service activities
Output in volume extrapolated with hours worked from the labour accounts for *activities of membership organisations*, coupled with a cost price index for wages and salaries per hours worked. Quarterly turnover statistics is used for *repair of computers and personal and household goods* as well as for *other personal service activities*, from the Division for Construction and service, with corresponding CPIs.

NACE T Activities of household as employers; undifferentiated goods- and services-producing activities of households for own account
Volume is extrapolated using hours worked for the industry from the labour accounts, with the corresponding cost price index based on wages and salaries per hour worked.

NACE U Activities of extraterritorial organisations and bodies
These are activities which are not treated as industrial (no branch), but rather by defining production boundaries and residence. Hence, it is not relevant for QNA.

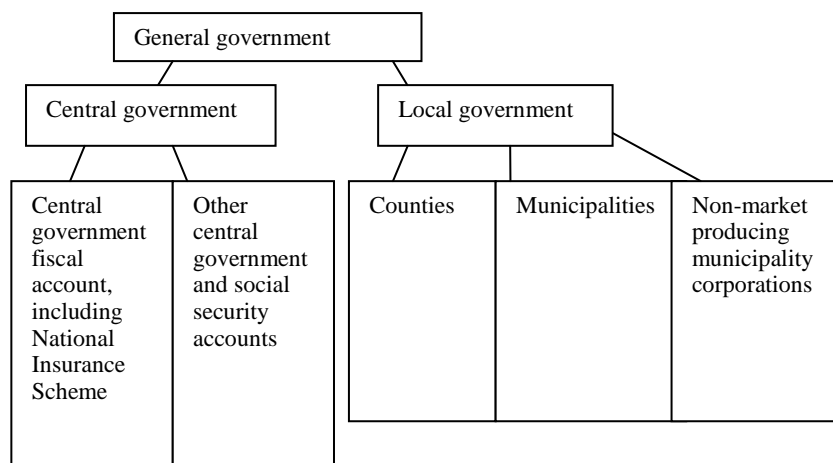#### 4.1.2 Non-market producing industries

General government
Gross value added in general government is derived from the cost side (non-market producers have no net operating surplus) as;

Gross value added = compensation of employees + consumption of fixed capital + taxes on production - subsidies on production.

Value added in central government is compiled for the industries *Defence, Public administration*, *Eductation*, *Human health activities*, *Social work* and *Arts, entertainment and recreation.* In local government, the same industries are covered with the exception of defence.

Central government accounts and local government accounts are both principal sources of the statistical system. The items of the government accounts are tabled with a whole set of information. By use of detailed decoding plans the required information is transformed into the structure and concepts used in the QNA and ANA, as well as in the non-financial sector accounts.

Figure 4.1.   General government

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                    ┌─────────────────────────┐
                    │   General government    │
                    └─────────────────────────┘
              ┌───────────────┐       ┌───────────────┐
              │   Central     │       │    Local      │
              │  government   │       │  government   │
              └───────────────┘       └───────────────┘
     ┌──────────┐  ┌──────────┐  ┌─────────┐ ┌──────────────┐ ┌────────────┐
     │ Central  │  │  Other   │  │Counties │ │Municipalities│ │ Non-market │
     │government│  │ central  │  │         │ │              │ │ producing  │
     │ fiscal   │  │government│  │         │ │              │ │municipality│
     │ account, │  │and social│  │         │ │              │ │corporations│
     │including │  │ security │  │         │ │              │ │            │
     │ National │  │ accounts │  │         │ │              │ │            │
     │Insurance │  │          │  │         │ │              │ │            │
     │  Scheme  │  │          │  │         │ │              │ │            │
     └──────────┘  └──────────┘  └─────────┘ └──────────────┘ └────────────┘
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Central government fiscal accounts, including the National Insurance Scheme, reflect how the National Budget, approved by the National Assembly each year, is carried out and show how central government income and expenditure is dispersed on the ministries. The information is organized in chapters, items and sub-items. The items reflect various types of expenditures or income.

Other central government and social security accounts collects information from institutions and establishments not covered by central government fiscal accounts, but which are defined as part of central government, including health enterprises, the Government Pension Fund Global, the Government Pension Fund Norway, state-owned universities and university colleges, among others. Other central government and social security accounts are organized from type of expenditure/revenue to comparable chapters as in the central government fiscal accounts, to assist in coherent central government data in total.

Local government consists of establishments run by counties and municipalities, including church accounts and non-market producing municipality corporations. Data for local government is transferred to Statistics Norway via electronic forms and electronic account files, as part of KOSTRA ("Municipality-State-Reporting", see the appendix for link to the source statistics). Information reported through the KOSTRA system is organized in functions and types. Government accounting data was earlier less detailed in local government than in central government, but with the introduction of KOSTRA the opposite is true.

The central government fiscal accounts follow the cash accounting system, where transactions are recorded when the payment is received or paid. Other central government and social security accounts records transactions according to the accrual accounting system, meaning that payment occur when the underlying economic events take place. Counties, municipalities and church accounts utilise an accounting system closely related to the accrual accounting system.

The information in the central and local government accounts described above is transformed into the data structure of the NA, the so-called FIIN structure, to serve both supply and use tables and the non-financial sector accounts. The item identifications in terms of chapters and corresponding items and sub-items or functions and types are the ones given in the government accounts themselves.

Each of these most detailed specifications are given a set of connected information, i.e. the nature of the flows in types of account, the purpose or function of the flows in COFOG groups, and the product specification of the flows in NA-products.

Type	Product	COFOG	NACE	Sector	Sector	Amount
Type of NA transaction, for example production, intermediate consumption, compensation of employees, income, transfers etc.	Detailed NA product for use in SUT (when relevant, i.e. production, intermediate consumption)	Classi-fication of function	Classi-fication of industry	Reporting sector (government)	Partner sector (when known)	NOK

Since parts of central and local government data is not readily applicable to national accounts definitions due to the different accounting systems adopted, great care is taken to convert the data to the principle of accrual accounting. This is done in cooperation with the Division for Public finance. In any given quarter, it is likely that data from one or more units in general government are missing during QNA compilations, and the Division for Public finance calculate estimates for these to assure that complete government accounts are available. Data for compensation of employees are incorporated into the integrated labour accounts, coupled with information from the quarterly Wage index, and the resulting employment figures are analyzed and compared to employment statistics as part of the checks for consistency of the data.

The calculation for **consumption of fixed capital** is general and described in chapter 6.3.

Taxes and subsidies on production are not present in central government. In local government, subsidies are non-existent, but industries in local government are all subject to a yearly excise duty and registration tax on motor vehicles. These are obtained in current prices from central government accounts once a year and divided equally on the quarters with price indices equal to the implicit price resulting from the current- and constant price calculations of intermediate consumption in the industry. The dispersion of the duty on industries in local government is based on net capital stock of relevant types of assets from the base year. Intermediate consumption is exogenous in the input-output model and supplied on a quarterly basis based on a transformation of central and local government data described above.

NPISHs
Gross value added in non-profit institutions serving households (NPISHs) is also derived from the cost-side, albeit with a slightly different method than for general government. Production in current prices is equal to gross value added plus intermediate consumption, as before, but output in **constant prices** is extrapolated by various volume indicators. In the industry *arts, entertainment and recreation*, output is extrapolated by current price estimates based on grants for cultural work and management of museums from the National Budget, deflated by a consumer price index for cultural services and entertainment. Growth in production of *education services* is extrapolated using an indicator for hours taught in elementary school and number of pupils in upper secondary school. *Human health activities* and *social work* uses annual grants (dispersed pro rata on quarters) from the National Budget, and a cost price index for wages and salaries per hours worked from the labour accounts. Output in *other service activities* is extrapolated with hours worked from the labour accounts.

Gross value added in **current prices** in NPISH industries is equal to compensation of employees from the labour accounts (see chapter 6.1), consumption of fixed capital calculated by the same method as described for general government, and

subsidies less taxes on production (both equal to zero in the NPISH sector). Intermediate consumption is a fixed share of production from the base year. The price indices of production is thus the implicit cost price indices based on compensation of employees (and consumption of fixed capital) and the volume estimates from the constant price compilations described above.

4.2. FISIM

Financial intermediate services indirectly measured (FISIM) is produced by banks and other financial institutions by charging a higher interest on loans, and by offering a lower rate of interest on deposits, than the reference rate of interest. The value of this intermediation service has to be calculated indirectly, as it is not readily observable. FISIM is used for intermediate consumption, final consumption expenditure and export, and is part of production in the financial and insurance activities industry and imported by residents who pay/receive interest on loans/deposits abroad. Use of FISIM, including exports and as well as imports, is extrapolated by the production of FISIM.

In the QNA, FISIM is calculated as the sum of: loans multiplied by the difference between the interest rates of borrowing and the reference rate of interest, and deposits multiplied by the difference between the reference rate of interest and the actual rate of interest on deposits. Loans and deposits are collected from banks, state owned lending institutions and credit- and finance companies. These are summed to totals, unlike in the annual national accounts where they are allocated to their respective paying/receiving sectors. The actual average weighted interest rates for loans and deposits are calculated, and the reference rate of interest, which represents the risk free interest rate excluding the service element, is represented by the three month NIBOR (Norwegian Interbank Offered Rate).

FISIM in constant prices may be seen as the margin of interest accrued in the reference period expressed in the interest rates of the base year, and loans and deposits are adjusted for the price change in final domestic use of goods and services. The price index of FISIM is used as a price index for production delivered to both the home- and export market, as well as for intermediate and final consumption.

4.3. Taxes less subsidies on products

In the Norwegian quarterly and annual national accounts, taxes on products, excluding VAT consist of all taxes on products except value added type taxes, including the ESA95 concepts D 212 Taxes and duties on imports excluding VAT and D 214 Taxes on products, except VAT and import taxes.

Items of other taxes on products are normally not easily categorized into these two main classes, although several of the items seem relevant for one of the two classes only. One clear exception is of course customs duties that exclusively belong to the first main class and sub-category D 2121 Import duties. In general, taxes on products are usually linked to both domestic production and imports. Goods domestically produced are taxed when leaving storehouse for sale or for own final use (exports are normally excluded from product taxes). Goods produced abroad are taxed when being imported. In Norway, approximately 30 different taxes on production and imports are treated as taxes on products. These are aggregated into categories for use. Subsidies on products consist of item D 319 Other subsidies on products exclusively. They are mainly paid by central government, but to a minor degree also by local government. Import subsidies - ESA item D 311 - are non-existent in Norway. There are currently 9 categories of subsidies in the QNA, applied to the products agricultural crop and livestock, education, and research and development services.

Taxes and subsidies on products
Monthly and yearly figures are collected from the government accounts and the
Norwegian Government Agency for Financial Management, used in combination
with detailed information on agricultural taxes and subsidies from the Norwegian
Agricultural Economics Research Institute. The cash-based monthly data are
converted to the NA accrual accounting principle by applying a month delay,
assuming payments are made after the transaction takes place. The yearly current
price estimates are divided equally on the quarters. The constant price estimates are
based on tax/subsidy-rates from the base year for the different use categories, while
the current price estimates are simply the exogenous data from the sources
mentioned above. Taxes and subsidies on products are not broken down by
industry but summed to totals and presented, alongside value added tax, as the
difference between GDP in market- and basic prices.

Value added tax (VAT)
Non-deductible VAT in current prices is calculated from all relevant product flows
of the use table using current VAT rates. This is known as theoretical VAT.
Accrued VAT in NA is compiled by converting cash-based figures from the central
government accounts (obtained as monthly figures from the Norwegian
Government Agency for Financial Management) to accrual accounting by applying
a three month delay. To achieve the accrued VAT, an adjustment reflecting the
difference between the theoretical and the accrued VAT is added to the theoretical
VAT. It is treated as a correction term and not spread on the various use categories.
In Norway, the adjustment made based on the difference between the theoretical
and accrued VAT has mostly been negative, as is to be expected (for detailed
information please see chapter 3 in the *Norwegian national accounts GNI
inventory for ESA95*). VAT at constant prices is calculated as for taxes and
subsidies on products.

Total accrued VAT is presented as part of the aggregate *taxes and subsidies on
products* in the published QNA tables.

5. GDP components: the expenditure approach

= Final consumption expenditure + Gross fixed capital formation + Changes in
inventories + Exports - Imports
= Final uses - Imports
= Final domestic uses + Exports - Imports

5.1. Household final consumption expenditure

Final consumption expenditure of households, excluding tourism, are calculated at
the most detailed level for 39 consumption groups, and published at a more
aggregate level equal to the two-digit COICOP (Classification of Individual
Consumption According to Purpose, a nomenclature developed by the United
Nations Statistics Division). Household final consumption expenditures are
calculated in general as in the rest of the QNA system; by extrapolating final
national account figures with quarterly growth in indicators. This is also the case
for household consumption abroad, and non-resident consumption in Norway,
which is calculated as an integrated process for use both in the BoP and the QNA.

Consumption of goods
The main source for household final consumption expenditures on goods is the
monthly Index of retail sales (turnover statistics), plus purchases of motor vehicles
(initial registration) and consumption of electricity and sales of petroleum products
(volume). These latter items are incorporated in the monthly Index of household
consumption of goods (IHCG). The IHCG is compiled according to National
Accounts definitions, and is published in advance of the QNA. To achieve
consistent estimates and due to the availability of monthly data in the Index of

household consumption of goods, the monthly seasonal adjustment factors from the index is used in the QNA. This has been proven to provide smoother and more reliable estimates (Rodriquez 2012).

The survey 'Wholesale and retail trade, breakdown of turnover by product', published every 5th year in accordance with Eurostat requirements, is used to convert the sales of goods through retail outlets at detailed industry level in the Index of retail sales to household consumption by consumption group through a transformation matrix. A given consumption group in the IHCG is then extrapolated by the corresponding weighted subgroups in the Index of retail sales and is coupled with one or more price indices from the Consumer Price Index (CPI) to create volume estimates. The CPI is available for most groups at the same level of detail as the consumption groups calculated in the QNA/IHCG or in some cases at a more detailed level, in which a weighted average is used.

For some consumption groups in the IHCG and subsequently in the QNA, volume indicators are used directly (as opposed to deflated turnover statistics from the Index of retail sales). This is the case for mineral waters and beer, part of consumption group food and beverages, which is extrapolated by an indicator based on litres sold of different kinds of beverages reported by the Norwegian Brewer- and Beverage Association, electricity consumption which uses monthly electricity statistics from the Division for Energy and Environmental statistics, petrol and diesel fuel as part of the consumption group purchases of vehicles and petrol which use sales of petroleum products from the Division for Energy and Environmental statistics, and tobacco and chewing tobacco which is a simple moving average of the y/y growth in imports (to smooth the volatility in reported imports). In addition, the registration of new and imported used motor vehicles (from an official source; www.ofv.no) is used to extrapolate the consumption of new motor vehicles. Household consumption of used motor vehicles is developed with the growth in fixed capital formation in the asset type motor vehicles in t-3 (due to tax regulations, incentives are to sell motor vehicles from industries to households after 3 years).

Consumption of services
There are more fragmented sources for the calculation of household consumption of services. The consumption groups of services are either extrapolated by service industry indicators, or by various turnover statistics. CPIs are available for most services. Exceptions are related to imputed consumption groups such as consumption of FISIM which utilises the implicit price index of FISIM production resulting from the value and volume calculations (see chapter 4.2). In addition there are some minor groups which are poorly covered by CPIs and where alternative price information (mainly producer prices indices) is used. For insurance, the constant price estimates are estimated directly based on volume information from the production side (hours worked), and prices are calculated residually (as for output, described in chapter 4.2).

Direct purchases abroad by resident households/Direct purchases by non-residents
Direct purchases abroad by resident households are extrapolated using either the quarterly travel survey, when available (usually lags one quarter when the QNA is published), or a mix of sources such as air transport statistics, departed passengers from Norwegian airports (from Avinor, state-owned airport operator) amongst others, for a preliminary estimate. The price index is based on a weighted average of consumer price indices from nine different countries.

Non-residents consumption in Norway's economic territory is extrapolated by a volume indicator based on guest nights in different accommodation establishments (hotels, camping sites, holiday dwellings etc.). The price index used is a weighted CPI of relevant consumption groups.

5.2. Government final consumption, including split individual/collective consumption

Government final consumption expenditure (GFCE) equals production (= compensation of employees + consumption of fixed capital + intermediate consumption + taxes on production - subsidies on production) less fees (sales of goods and services) plus social benefits in kind. GFCE is grouped according to COFOG (Classification of Functions of Government). Government accounts are described in more detail in chapter 4.

The sources used to estimate government final consumption expenditure are the central and local government accounts, as for gross value added described in chapter 4. Data for output, measured as cost of production, are available from items by type on the cost side, while government expenses (expenditure side) are coded by type (kind of transaction) apart from by product, by industry, by sector and by COFOG. Fees appear on the income side. Government purchases from non-government producers supplying households are also available in the government accounts.

Industry specific fees in current prices from quarterly government accounts data are deflated with input price indices from corresponding industries. Benefits in kind in current prices are price indices of production of relevant products. Data from quarterly reporting in central and local government accounts is detailed enough to split consumption in individual and collective consumption according to the detailed decoding plans mentioned in chapter 4.1. In the QNA, GFCE in central government is compiled for *Defence*, *Human health activities* (collective (R&D etc.) and individual), *Education* (collective and individual), *Social work* (individual), *Arts, entertainment and recreation* (individual) and *other GFCE* (collective, consisting of the remaining consumption groups such as general R&D, public administration, environmental issues, police, legal system etc.). GFCE in local government is compiled for *Human health activities* (collective and individual), *Education* (collective and individual), *Social work* (individual), *Arts, entertainment and recreation* (individual) and *Other GFCE* (collective, consisting of the remaining consumption groups). The consumption groups are published at a more aggregated level, described in chapter 2.

5.3. NPISH final consumption

Non-profit Institutions Serving Households (NPISHs) output is the sum of costs; the sum of intermediate consumption, compensation of employees, consumption of fixed capital and net taxes on production less receipts of sales of goods and services. Consumption is defined as output less services paid by households. Quarterly estimates of NPISHs final consumption expenditures are extrapolated using growth in industry volume output, and prices are also the implicit prices from value and volume output calculations in corresponding industries. The industry output calculations are described in chapter 4.1. NPISH final consumption expenditures are calculated for *Health activities*, *Arts*, *entertainment and recreation*, *Education*, *Social work* and *Activities of membership organisations*, and published only for the total.

5.4. Gross capital formation

Gross capital formation consists of gross fixed capital formation and changes in inventories and valuables. Changes in inventories are residuals in the model, there is no quarterly information available. There is also no quarterly information for changes in valuables.

Gross fixed capital formation (GFCF)
Defined as value of acquisitions less disposals of new or existing fixed assets. Fixed assets, which are produced assets used repeatedly, or continuously, in processes of production for more than one year, consist of both tangible fixed

assets (dwellings, other buildings and structures, other structures, transport equipment, other machinery and equipment, livestock for breeding etc., vineyards, orchards etc.) and intangible fixed assets (mineral exploration including oil and gas, computer software, entertainment, literary or artistic originals, etc.). Inventories and valuables that are not used repeatedly in production are not recorded as fixed assets. The same is the case for tangible and intangible non-produced assets which are therefore not included in the capital stock and capital formation of industries, only in non-financial sectors and hence in the non-financial sector accounts only.

GFCF has two main breakdowns; by types of fixed assets and by kind of activities (by industries and market/non-market, as for production, to form symmetric output and capital data for productivity analysis). The GFCF flows by industries are in terms of aggregated products at the level of types of assets. In the ANA there are 56 types of assets, grouped in 7 main categories, while in the QNA these assets are aggregated to 9 types; *Building and construction*, *Oil and gas production wells*, *Oil platforms and modules*, *Pipelines for oil and gas*, *Ships and boats*, *Aircrafts*, *Transportation vehicles*, *Machinery and equipment* and *Petroleum exploration*. At the more aggregated published level, the total (cross-classification for industries and asset types) for 6 asset types are shown, as well as for industries at the same level of breakdown as for output/gross value added (see chapter 2.2). As for output, acquisitions of fixed assets from the base year are extrapolated using short-term indicators, albeit with a less extensive set of indicators. A broad description follows below, distinguishing between market producing industries, NPISH and general government. The figures (both acquisition and disposal) are either inflated or deflated using asset specific price indices which are endogenous in the input-output model, calculated at product level with home market and import price indices, with shares and tax/duty rates from the base year (often with unit product prices from trade statistics, or implicit prices from industry output calculations).

Market producing industries and NPISH
In the majority of market producing industries, acquisition of fixed capital consists of three asset types; *building and construction*, *transportation vehicles* and *machinery and equipment*. The short-term indicators used are assets rather than industry specific. The exception is for agriculture, fisheries, petroleum activities, manufacturing, wholesale and retail trade and electricity supply, where industry specific statistics for acquisition of fixed capital exists. For the former, the general indicators used in most market producing industries in addition to NPISH are:

- *Buildings and construction*; monthly building statistics for building work started, which is lagged for 35 periods (months)[16] with descending weights, reflecting the estimated completion of start up building work
- *Transportation vehicles*: monthly series for the number of initial registration of trucks and passenger cars etc. (industry specific, i.e. more passenger cars than trucks in certain industries) from the Norwegian Public Roads Administration
- *Machinery and equipment*; are simply extrapolated with volume output growth in the corresponding industries in lack of short-term indicators

Agriculture; same three asset types, but figures for building and construction and machinery and equipment are annual estimates from The Budgeting Committee for Agriculture, dispersed on quarters reflecting that most investments take place during the 2nd and 3rd quarter. The indicator for transportation vehicles is the above mentioned series for initial registrations of trucks from the Norwegian Public Roads Administration. *Fisheries*; two asset types, ships and boats and machinery and equipment, both developed with the growth in imports of new and used fishing vessels from trade statistics (see chapter 5.5. below).

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[16] The lag structure is based on a study done in the end of the 1990s.

Extraction of crude oil and natural gas; six asset types, where each type has detailed information from the quarterly statistic *Oil and gas activity, investments* from the Division for Energy and environmental statistics. The statistic covers all active enterprises or investment enterprises within extraction of crude oil (NACE 06.100) and extraction of natural gas (06.200) and pipeline transport (49.500), with the exception of licensees without an operatorship and active investment enterprises within drilling services attached to oil and gas extraction (09.101)[17]. The QNA is published in advance of the quarterly statistics for investments in petroleum activities, and thus an estimate for the total is made by the division supplying data, in which all asset types are adjusted accordingly in the QNA. The final estimate is then incorporated with a one quarter lag (note that the initial estimate is considered reliable). For more information on the quarterly statistics on investment in petroleum activities as well as the other statistics referred to, see the list of links provided in the appendix. *Services incidental to extraction of crude oil and natural gas;* uses same source as for extraction of crude oil and natural gas, but only a part of the population (09.101) in the industry is covered in the above mentioned statistic and it is not published. The estimates are thus considered less reliable, but the level of the investment figures is small compared with the extraction industry. *Transport via pipelines;* one asset type, *oil and gas pipelines*, same source as above.

Manufacturing and electricity supply; same three types of assets, and all industries are covered by the quarterly statistic *Investments in manufacturing, mining and quarrying and electricity supply*.

Wholesale and retail trade; compiled for three asset types as for the majority of the other industries described above, but with detailed information from the quarterly *Retail trade, investment statistics*.

Disposal of fixed assets in volume are set equal to the final ANA in the majority of the industries, evenly dispersed on the quarters (the major exception is petroleum activity where trade statistics is used to trace exports of used petroleum asset types such as oil rigs and modules etc.).

General government
The quarterly central and local government accounts are used to estimate acquisition and disposal of fixed assets in general government. In **local government** the three asset types *building and constructions*, *transportation vehicles and machinery and equipment* are represented in all local government industries. Both acquisition and disposal are covered by the local government accounts and supplied as current price estimates which are coupled with the above mentioned general asset type price indices. In **central government**, public administration and human health work are covered by the three asset types mentioned, while education, social work and arts, entertainment and recreation are covered by the asset types *building and constructions* and *transportation vehicles*. Defence has in addition to all of these, GFCF in *ships and boats* and *aircrafts and helicopters*. Both acquisition and disposals are supplied with information from central government accounts and coupled with corresponding general asset type price indices.

See chapter 4.1 for detailed information on central and local government accounts. Great care is taken to convert the estimates to accrual accounting standards, and is done so with expert judgement from the Division for Public finance.

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[17] From Q1 1996 accrued investments for drilling services attached to oil and gas extractions (09.101) have been collected. These figures have never been published.

Changes in inventories and valuables
Estimation of changes in inventories by products takes place through the balancing of supply and use, described in chapter 3. The changes in inventories are assessed based on economic interpretation, and the other components may be adjusted accordingly. Since the QNA is an extrapolation of the final ANA, the level of inventories are "inherited" from the annual compilations, and thus reflects the persistent additions that have been made to inventories in the past. At time being, statistics on inventories have been attempted in the ANA but discarded.

Acquisition less disposal of valuables has not been introduced in the Norwegian National Accounts in a significant way. In the ANA, the product *works of art* has been identified, but with an insignificant level of investment, the item has been listed among GFCF instead of being focused on separately. Hence, no separate calculations are made for valuables in the QNA.

5.5. Imports, exports
Imports and exports are compiled at product level. Main sources are customs data, which is utilized for the monthly external trade statistics from the Division for External trade statistics, for current price estimates of trade in goods, coupled with unit price indices. The quarterly sample survey on International trade in services (UT) and corresponding price indices from domestic production is the main sources for most service items. At time of publication of QNA, the imports/exports of goods are considered reliable, while the imports/exports of services are mostly trend extrapolations for the current quarter. Figures are compiled for 70-80 products, and published at a more aggregated level (see chapter 2 for contents published). For detailed source description see links to relevant statistics provided in the appendix.

Imports of goods
Imports of goods are distinguished in three main categories, each cross-classified with a set of products, namely ; *imports of goods recorded in external trade statistics*, *imports of ships, oil rigs and modules*, and *imports not recorded in external trade statistics*. No general adjustment is made to external trade statistics in order to account for goods that cross the border without a change of ownership, but adjustments are made for foreign ownership territorially, related to cross-border off-shore oil and gas fields in the North Sea and air transportation of SAS (Scandinavian Airlines). Imports of goods are valued at c.i.f. prices, which include all freight and insurance connected with the imported goods, irrespective of whether the payments are made to Norway or abroad. The items of goods not recorded in external trade statistics refers to imports of unspecified goods for oil and gas extraction activities and pipeline transportation which is calculated based on oil and gas activity statistics, and jet fuel and petrol and marine gas oils purchased abroad by moveable equipment (ships, aircrafts etc.).

Imports of services
Three main categories; *current expenditures abroad for shipping*, *direct purchases abroad by residents- Travel* (calculated by the sources mentioned under *Direct purchases abroad by resident households* in chapter 5.1. The development in the two components are set equal, but the level is different as imports contain more than just households direct purchases abroad) and *imports of other services*. The main other sources used are UT-statistics (sample survey), maritime transport statistics and oil and gas activity statistics. Imports of services from UT-statistics are simply a trend extrapolation in the current quarter, as the survey lags one quarter when QNA is published.

Exports of goods
The same broad categorization of exports of goods as for imports of goods; including and excluding information from trade in goods statistics and a last category for exports of ships, oil rigs and modules. Products relating to the last

category includes adjustments made for foreign ownership shares in cross-border off-shore oil and gas fields.

Exports of goods are valued f.o.b. at Norwegian ports where goods are exported, or at the customs frontier of the operation area of the Norwegian part of the Continental shelf. The f.o.b. prices are purchasers' prices that may include export levies and costs connected with loading, irrespective of whether these are paid by the exporter or importer.

Exports of services
The three main categories are *gross receipts from abroad in shipping*, *direct purchases in Norway by non-residents*, and *exports of other services*. Gross receipts from abroad in shipping are calculated using maritime transport statistics for annual benchmarking combined with the quarterly development in the UT statistics, while direct purchases in Norway by non-residents are compiled as described under chapter 5.1 for household consumption. Exports of other services uses UT-statistics, where the current quarter is a trend extrapolation due to the survey being completed after publication of the QNA.

Prices used for external trade in goods are unit price indices from the Division of External trade statistics, and most often prices of relevant products from domestic output for external trade in services. Only on gross receipts from abroad in shipping and Travel abroad are separate price indices used.

6. GDP components: the income approach

= Compensation of employees + Operating surplus + Consumption of fixed capital + Other taxes on production - Other subsidies on production

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

Compensation of employees is made as part of the integrated quarterly labour accounts. Compensation of employees has two breakdowns; by category of main components and by kind of activity, i.e. by *wages and salaries* and *employers social contributions*, and by industry. The labour accounts are compiled at the same detailed industry level as the rest of the QNA.

In the quarterly compilations, compensation of employees in market producing industries is the product of volume (full time equivalent persons) and price (wages and salaries per full time equivalents) which results in wages and salaries, and added a mark-up (the mark-up used in final annual labour accounts) reflecting employer's social contribution, to form compensation of employees. For a description of the components, see chapter 7.

However, in general government, compensation of employees and wages and salaries are taken directly from the government accounts and volume components (full time equivalent persons) are derived residually as wages and salaries divided by wages and salaries per full time equivalent person (derived from the quarterly Wage index). For a list of the sources in the quarterly labour accounts, see chapter 7, and for detailed information on government accounts, see chapter 4.1, as well as links to *About the statistics* provided in the appendix.

6.2. Other taxes less subsidies on production

Other taxes and subsidies on production[18] are taxes and subsidies irrespective of quantity or value of the goods and services produced or sold, incurred by resident producers and that are payable/receivable to/from general government as a result of engaging in production. There are two breakdowns; by types and by kind of activity (industry). The information is available from government accounts (local, central- and other central government accounts (see chapter 4.1 for details).

In the QNA, other taxes and subsidies on production are annual estimates from government accounts, which are dispersed evenly on the quarters. An estimate for the annual figures at a detailed level is made by the Division for Public finance based on information from the National Budget in advance of the complete annual accounts, and coded to NA industry. This is done when compiling figures for the 1st quarter. The final annual central government accounts have some 100 items for taxes and 450 items for subsidies, while other central government accounts has nearly 20 tax items. Local government taxes on production are mainly property taxes, while there are various items of subsidies, such as local employment initiatives, subsidised craft training etc. These makes up the types and is subsequently coded as other taxes and subsidies on production at industry level in the QNA. Other taxes and subsidies on production are only compiled in current prices.

6.3. Gross operating surplus and mixed income

Gross operating surplus in an industry is defined as:
= Value added – Compensation of employees – Other taxes on production + Other subsidies on production

Net operating surplus;
= Gross operating surplus - Consumption of fixed capital

Net operating surplus is the balancing item in the generation of income accounts. It is the surplus accruing from processes of production before deducting any interest charges, rents or other property incomes payable on the financial assets, land or other tangible non-produced assets required to carry on the production. The breakdown is solely by kind of activity.

In the non-financial sector accounts, operating surplus in a sector is defined similarly. For households, a major part of this is called mixed income. These are items compiled in the non-financial sector accounts.

Operating surplus is only compiled in current prices.

Consumption of fixed capital
Consumption of fixed capital is defined as a decline in the current value of the stock of fixed assets owned and used by a producer during the course of the accounting period, as a result of physical deterioration, normal obsolescence or normal accidental damage. There are two breakdowns, i.e. by type of fixed assets and by kind of activities. Calculation of consumption of fixed capital applies to net capital stock - valued at written-down replacement cost, i.e. gross capital stock less cumulative consumption of fixed capital - and changes in this value. Consumption of fixed capital, and the capital stock of fixed assets, is calculated according to the perpetual inventory method (PIM) with geometric depreciation rates (see chapter 5.4 for a description of the calculations for gross fixed capital formation). Consumption of fixed capital is calculated for the aggregated types of assets in an

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[18] Note that *taxes and subsidies on production* = other taxes and subsidies on production + taxes and subsidies on products.

industry, which in general government ranges from two or three (in most industries) to five (defence).

7. Population and employment

Quarterly employment figures are calculated in the integrated quarterly labour accounts at the same industry level as the rest of the industry figures in the QNA. Employment, full-time equivalent employment and total hours worked, by employees and self-employed as well as wages and salaries and compensation of employees, are published on a quarterly basis. Annual earnings, full time equivalents, are published as part of the QNA, but only as preliminary annual figures and at a more aggregate level. All quarterly figures are consistent with annual data (sum of quarters, and subject to the same benchmarking to the final and more comprehensive annual labour accounts). Seasonally adjusted figures are published for employed persons, full time equivalent persons and total hours worked (employees and self-employed). The compilation method adheres to the same general idea as the rest of the QNA; extrapolation of final annual labour accounts by the use of short-term indicators. With only a minor exception (employers social contributions, defined as compensation of employees less wages and salaries), all labour accounts variables are compiled in the indicator system, described in chapter 3.

The methods used in the quarterly labour accounts are developed from the fundament of final annual labour accounts calculations. The building blocks of volume variables in the labour accounts start with the definition of jobs. Jobs differ from employed persons by allowing for several jobs for the same person and a person may be employed but out of a job if he is temporarily not working but has a formal attachment to the job. Jobs are divided into main jobs, side jobs, full time jobs and part time jobs. Persons employed are equal to main jobs. While jobs are a part of the labour accounts and available at the most detailed level in annual figures, they are not published. Full time equivalent persons correspond to full time jobs plus part time jobs converted to full time. Note that it is contractual and not actual working hours that are used in the concept of full time and part time. Thus, full time equivalents do not include effects of sickness leave, overtime etc. To reach total hours worked we need to introduce contractual-, overtime- and absence hours. Contractual hours are calculated as normal weekly hours times the number of working weeks, the latter being the sum of full time equivalents times the number of working weeks in a year.

7.1. Population

Total population is defined according to the concept of residence, and includes all persons regardless of citizenship who resides permanently within the country's economic territory even if they are temporarily absent. Permanent residence in a country is defined as staying, or intending to stay, on the economic territory of a country for one year or more. Temporarily absentees are defined as people who are absent, or intending to be absent, for less than a year. However, nationals who study abroad, military personnel stationed abroad, nationals working as staff of diplomatic missions abroad, nationals on ships, aircrafts etc. operating outside the economic territory and patients receiving medical treatment abroad, are considered as part of the total population.

The one-year limit to be considered as a permanent resident differs from Statistics Norway's official population statistics (population register data) in which the limit is six months. Population as part of national accounts data reported to Eurostat has been reported as the official population figure and thus we assume that the different limits in respect to residence has little impact on the total.

The temporal reference for total population is the average between the opening and closing date of a quarter, for example for the 4th quarter it is the average of the population as of 1st of October and 1st of January, known as the mean population.

7.2. Employment: persons

According to ESA2010, paragraph 11.11: "Employment covers all persons engaged in productive activity that falls within the production boundary of the national accounts. Persons in employment are employees or self-employed persons. Persons holding more than one job are classified as employees or self-employed according to their main job".

Two main sources are used in the quarterly compilations of employment in the QNA (excluding general government): Statistics Norway's Labour Force Survey (LFS) and the register-based employment statistics (RES). Both LFS and RES define employment as employed persons between 15 and 74 years old and only include persons who are registered as residents in the population register. Hence, persons working in Norway who are not registered as permanent residents or who are planning to stay for less than six months are not included in the employment figures in the LFS and RES. Statistics Norway publishes separate figures for all registered non-residents once a year. In national accounts figures, employed non-residents are included in the employment figures as long as they work in an establishment in the country's' economic territory. On a quarterly basis, estimates of the number of employed persons staying for six months or less are made by the Division for Labour market statistics by utilising information from various registers. In addition, adjustments are made for including employees and self-employed of non-resident producer units and foreigners in ocean transport, both of which falls within the production boundary of national accounts.

Data on employees at 5-digit NACE level is supplied by the RES on a quarterly basis. The LFS is mainly used for reference of total employment development due to relatively large sampling errors at a more disaggregate level.

Employment in general government is calculated differently. The starting point is wages and salaries and compensation of employees from quarterly government accounts. Wages and salaries from quarterly government accounts (fully consistent with national accounts definitions, and described in more detail in chapter 4.1) is coupled with information on wages from the quarterly Wage index from the Division for Income and wage statistics, to form full time equivalent persons, from which employment follows (assuming same relationship between employment and full time equivalent employees as in base year). Information on sickness and absence leave, overtime etc. is incorporated, resulting in hours worked. More details in paragraph 7.3. The resulting volume figures are compared with corresponding figures from the RES and LFS.

For NPISHs, no information is available and all variables in the quarterly labour accounts are currently compiled using trend extrapolation, and by assuming the same growth in wages and salaries, full time equivalents, as for employees in local government.

7.3. Employment: total hours worked

Sickness absence, self-certified and doctor certified, are available and incorporated at the most detailed level. In addition to this information, working days and holidays are used directly in the compilation of hours worked such that 'unadjusted' hours worked are in fact calendar adjusted (otherwise they would bear little meaning). Information on structural changes, such as the prevalence of the use of overtime etc. is supplied by the LFS and the quarterly Wage index, but mostly only updated in the final annual labour accounts, unless there is evidence of a structural shift.

In the quarterly calculations, the starting point, excluding general government, is employees who are extrapolated at the most detailed level by quarterly statistics for employees from the RES, describe above. In the QNA, full time equivalents follows employment (thus assuming same relationship between employed persons and full time equivalents as in the base year), adjusting for changes in the relationship between full time jobs and part time jobs and average contractual hours worked for part time jobs (including side jobs) in relation to contractual hours worked for full time jobs, with information from the LFS when necessary. Total hours worked follows full time equivalents, but are adjusted for development in sickness and leave absence, overtime, working days and industry specific holidays and shift work.

For general government, as described above, volume calculations start in the opposite end. Wages and salaries are divided by wages and salaries per full time equivalent person, including remuneration for overtime and payment in kind (in both numerator and denominator such that the effect of overtime is cancelled out), resulting in full time equivalents. Information on before mentioned sickness leave and absence leave, overtime, working days, shift work and holidays are used to get from full time equivalents to total hours worked. And equivalently, information on relationship and composition of jobs, to get to employed persons from full time equivalent employment.

Total hours worked for self-employed follows the same methods and source as employees in the quarterly compilations (thus assuming same development). The labour accounts do not calculate figures for mixed income, only volume variables are made for the self-employed.

8. From GDP to net national saving

This chapter deals with the components from GDP to net lending/net borrowing and is overlapping with the Balance of Payments (BoP) and non-financial sector accounts. In Norway BoP is fully integrated with the national accounts and hence fully consistent with the Rest of the World (RoW) Account of the national accounts. Note also that Norway at present only compiles quarterly non-financial sector accounts for households and NPISH, while the remaining sectors are part of the annual non-financial sector accounts.

8.1. Primary income from/to the ROW, gross national income

Gross national income (GNI)
GNI is the sum of gross primary incomes receivable by resident institutional units or sectors, (i.e. Norwegians and foreigners that residents in Norway) from domestic production and property income, compensation of employees from abroad, less property income, compensation of employees paid to abroad. GNI equals the sum of gross primary incomes of the sectors, but at time of QNA compilations is only available for the total. GNI is defined as:
= Gross domestic product (GDP) - Primary incomes payable to non-residents, net
= Gross domestic product (GDP) - Primary incomes payable to non-residents + Primary incomes receivable from non-residents

Compensation of employees
Compensation of employees in the context of Balance of Payments (BoP) is distinguished in two main categories; *compensation of employees to abroad* and *compensation of employees from abroad*. Compensation of employees to the ROW is based on quarterly estimates of the number of non-residents working in Norway, employees working in ocean transport abroad, employees in SAS (Scandinavian Airlines), and personnel in Norwegian embassies. These estimates are compiled as

part of the Labour Account calculations (although not published separately) and calculated as for domestic market producing industries, i.e. as volume (full time equivalents) times wages and salaries per full-time equivalent person. The levels of these components are mainly established in final annual account compilations, and extrapolated using quarterly growth in the domestic average for the totals. The estimate from the ROW is an estimate for the group as a whole and is facing similar limited source statistics; the estimate for the annual figures (from tax authorities and from the register of wages and salaries), evenly dispersed on the quarters, is extrapolated using trend extrapolations. Note that the figures for compensation of employees to and from the ROW are of minor magnitude both compared to total compensation of employees and to other items involved in the transition from GDP to GNI.

Property income
Investment income (property income D.4 in ESA95) is defined as income accruing to an investor from the ownership of financial assets. Interest is the largest item contributing to investment income and investment expenditure. The main sources used to record data on interest income and interest expenditure in the BoP is the quarterly census of financial institutions, quarterly data from general government including the Norwegian Pension Fund and the quarterly sample survey of non-financial enterprises (UT statistics, see appendix), which is also the main source used to record data on dividends to and from abroad. Reinvested earnings from non-residents to Norway are based on information from a specially designed system to capture Norwegian direct investments abroad with accounting information from the books of the direct investment enterprises, and the UT statistics for foreign direct investment in Norway. Preliminary reinvested earnings data are based on expected surplus in the enterprises and reported dividends paid or received, reported monthly. There is a large uncertainty attached to expected surpluses and thus the data is subject to revisions.

Taxes on production and imports and subsidies
Taxes on production and imports and subsidies in the context of the BoP are virtually not applicable in Norway. The small part that could refer to taxes on production and imports and subsidies in part are reported under current transfers.

Gross national income (GNI)
GNI is GDP adjusted for the net flow of compensation of employees, property income and taxes on production and imports and subsidies described above. GNI is published as part of the final ANA and the QNA.

8.2. Consumption of fixed capital, net national income, acquisitions less disposals of non-financial non produced assets
Net national income is derived as gross national income less consumption of fixed capital. The compilations of consumption of fixed capital are described in chapter 6.

Non-financial assets consist of produced assets: fixed assets, inventories and valuables (antiques, art objects etc.), and non-produced assets: nature capital (tangible non-produced assets) and intangible non-produced assets (patented entities, leases and other transferable contracts, etc.). Information on acquisition less disposal of non-produced assets is obtained from the UT statistics which include a separate item to capture transactions in such capital.

8.3. Current transfers from/to the ROW, net national disposable income

Current transfers are all unrequited transfers that are not transfers of capital. There are two main components. The first component is current transfers of government, consisting of taxes, pensions and other transfers (development aid etc.). The main source is government accounts, in particular central government accounts.

The second main component is other current transfers, consisting mainly of transaction related to insurance (net premiums and claims) and households' current transfers (i.e. workers' remittances and others). Here, the main sources are the accounts of insurance companies and special estimations based on information from various sources related to the household sector.

Net national disposable income
= Gross national income - Consumption of fixed capital - Current transfers payable to non-residents, net
= Gross domestic product - Consumption of fixed capital - Primary incomes payable to non-residents, net - Current transfers payable to non-residents, net
= Net national saving + Final consumption expenditure

Net national disposable income is derived as net national income less net current transfers to and from the ROW. Net national disposable income is published as part of the ANA and the annual non-financial sector accounts. In addition to net national disposable income, real net national disposable income is also derived which is net national disposable income deflated by the price index for net final domestic expenditure, and published on a quarterly basis as part of the QNA, and subsequently in the annual non-financial sector accounts.

8.4. Net national saving

Net national saving
= Net national disposable income - Final consumption expenditure

Final consumption expenditure is described in chapter 5. Net national saving, nominal and real, is published as part of the QNA, as well as for the annual non-financial sector accounts.

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Appendix A.   Source statistics

	Industry	Source	Link	Perio-dicity	Information relating to QNA
Agriculture and forestry	*Agriculture*	The Budgeting Committee for Agriculture	http://www.nilf.no/english/Account_statistics_in_agriculture_and_farm_forestry	A	Estimates for grain, potatoes, vegetables, fruit, flowers, eggs, wool and various other products, in volume, and with corresponding price indices. Dispersed on quarters in accordance with harvest seasons
	Agriculture	Nortura SA (The Norwegian Meat Cooperative)	http://www.nortura.no/?lang=en_US (statistics not available online)	M	Pork, cattle, sheep and poultry
	Agriculture	TINE SA	http://www.tine.no (statistics not available online)	M	Cows milk
	Forestry	Commercial roundwood removals	http://www.ssb.no/en/jord-skog-jakt-og-fiskeri/statistikker/skogav	Q	Volume and price index
Fishing and aquaculture	*Fisheries*	Directorate of fisheries	http://www.fiskeridir.no/fiskeridirektoratets-statistikkbank	Q	Quarterly volume and price estimates for various species
	Aquaculture	External trade in goods	http://www.ssb.no/en/utenriksokonomi/statistikker/muh	M	Export of salmon and trout, in volume and value
Mining and quarrying, manufacturing		Index of industrial production	http://www.ssb.no/en/energi-og-industri/statistikker/pii	M	Volume estimates for mining and quarrying including petroleum activities
		Producer price index for oil and gas, manu facturing, mining and electricity	http://www.ssb.no/en/priser-og-prisindekser/statistikker/ppi/	M	
		Turnover in oil and gas, manufactur ing, mining and electricity supply	http://www.ssb.no/en/energi-og-industri/ statistikker/ ogibkoms	M	Current price estimates for services incidental to oil and gas extraction
Electricity, gas, steam and air conditioning supply	*Electricity*	Electricity, monthly figures	http://www.ssb.no/en/energi-og-industri/statistikker/elektrisitet	M	Volume estimates
	Electricity	Electricity prices	http://www.ssb.no/en/energi-og-industri/statistikker/elkraftpris	Q	Weighted price index for domestic production (for household consumption, industries and energy-intensive manufacturing)
	Gas, steam and air conditioning supply	Index of industrial production	http://www.ssb.no/en/energi-og-industri/ statistikker/pii	M	Volume estimates

Water supply, sewage, waste management and remediation services	*Water supply, sewage, waste management and remediation services*	Water supply, sewage, waste management and remediation services, turnover	http://www.ssb.no/en/natur-og-miljo/statistikker/ varoms/termin/2013-12-13	Bi-M	
	Water supply, sewage, waste management and remediation services	Consumer price index	http://www.ssb.no/en/kpi	M	
Construction	*Construction*	Production index for construction	https://www.ssb.no/en/bygg-bolig-og-eiendom/ statistikker/bygganlprod	Q	
	Construction	Construction cost index for residential buildings	https://www.ssb.no/en/priser -og-prisindekser/ statistikker/bkibol	M	Detached houses of wood, multi-dwelling houses
	Construction	Construction cost index for road construction	https://www.ssb.no/en/priser -og-prisindekser/ statistikker/ bkianl	Q	Road construction, total
Wholesale and retail trade	*Repair of motor vehicles and motorcycles*	Wholesale and retail trade sales statistics	https://www.ssb.no/en/vareh andel-og-tjenesteyting/ statistikker/vroms	Q	Follows the total index
	Repair of motor vehicles and motorcycles	Consumer price index	http://www.ssb.no/en/kpi	M	For repair of motor vehicles and motorcycles
Transport and storage	*Rail and land passenger transport*	Public transport	https://www.ssb.no/en/transp ort-og-reiseliv/ statistikker/ kolltrans	Q	Volume estimates for various vehicles (kilometres driven)
	Rail and land passenger transport	Consumer price index	http://www.ssb.no/en/kpi	M	
	Freight road transport	Turnover index for transport, tourism and ICT	https://www.ssb.no/en/transp ort-og-reiseliv/statistikker/ sroi	Q	
	Freight road transport	Transport and storage, price indices	https://www.ssb.no/en/priser -og-prisindekser/statistikker/ tpitralag	Q	
	Sea and coastal transport abroad	External trade in services	http://www.ssb.no/en/utenrik sokonomi/statistikker/uhtjen ester	Q	
	Sea and coastal transport abroad	Transport and storage, price indices	https://www.ssb.no/en/priser -og-prisindekser/statistikker/ tpitralag	Q	
	Sea and coastal transport domestic	Turnover index for transport, tourism and ICT	https://www.ssb.no/en/transp ort-og-reiseliv/statistikker/ sroi	Q	
	Sea and coastal transport domestic	Transport and storage, price indices	https://www.ssb.no/en/priser -og-prisindekser/statistikker/ tpitralag	Q	
	Air transport	Air transport	https://www.ssb.no/en/transp ort-og-reiseliv/ statistikker/ flytrafikk	Q	
	Air transport	Consumer price index	http://www.ssb.no/en/kpi	M	

	Warehousing and support activities for transportation	Turnover index for transport, tourism and ICT	https://www.ssb.no/en/transport-og-reiseliv/ statistikker/ sroi	Q	
	Warehousing and support activities for transportation	Maritime transport	https://www.ssb.no/en/transport-og-reiseliv/ statistikker/havn	Q	
	Warehousing and support activities for transportation	Transport and storage, price indices	https://www.ssb.no/en/priser-og-prisindekser/ statistikker/tpitralag	Q	
	Postal and courier activities	Norway post, quarterly reports	http://www.postennorge.com/financial-information/ annual-and-quarterly-reports	Q	
	Postal and courier activities	Transport and storage, price indices	https://www.ssb.no/en/priser-og-prisindekser/ statistikker/tpitralag	Q	
Accommodation and food service activities	*Accommodation and food service activities*	Turnover index for transport, tourism and ICT	https://www.ssb.no/en/transport-og-reiseliv/ statistikker/sroi	Q	
	Accommodation and food service activities	Accommodation	http://www.ssb.no/en/transport-og-reiseliv/ statistikker/overnatting	M	
	Accommodation and food service activities	Consumer price index	http://www.ssb.no/en/kpi	M	
Information and communication	*Telecommunications and information and communication*	Turnover index for transport, tourism and ICT	http://www.ssb.no/en/transport-og-reiseliv/ statistikker/sroi	Q	
	Telecommunications	Consumer price index	http://www.ssb.no/en/kpi	M	
Financial and insurance activities, professional, scientific and technical activities	*Banking services*	Financial corporations, accounts	http://www.ssb.no/en/bank-og-finansmarked/ statistikker/orbofrk	Q	
	Insurance services	Life and non-life insurance companies, accounts	http://www.ssb.no/en/bank-og-finansmarked/ statistikker/forsikring	Q	
	Banking services	Consumer price index	http://www.ssb.no/en/kpi	M	
Real estate activities	*Real estate activities*	Business activities and support service activities, turnover index	http://www.ssb.no/en/varehandel-og-tjenesteyting/ statistikker/efuoi	Q	
	Dwelling services of owner-occupiers	Building statistics	http://www.ssb.no/en/bygg-bolig-og-eiendom/ statistikker/byggeareal	M	This is only for a small part of output, consisting of dwellings started (the rest is the housing stock in t-1).
Professional, scientific and technical activities		Business activities and support service activities, turnover index	http://www.ssb.no/en/varehandel-og-tjenesteyting/ statistikker/efuoi	Q	
		Business activities, price indices	http://www.ssb.no/en/priser-og-prisindekser/ statistikker/tpinaering	Q	

Administrative and support service activities		Business activities and support service activities, turnover index	http://www.ssb.no/en/varehandel-og-tjenesteyting/statistikker/efuoi	Q	
		Business activities, price indices	http://www.ssb.no/en/priser-og-prisindekser/statistikker/tpinaering	Q	
Education, market producers	*Education*	Quarterly labour accounts		Q	
Health and social work, market producers	*Human health activities*	Central government accounts		A	Grants and social benefits in kind
	Social work	Kindergartens	http://www.ssb.no/en/utdanning/statistikker/barnehager	A	Estimates are made on a quarterly basis
	Human health activities and social work	Consumer price index	http://www.ssb.no/en/kpi	M	
Arts, entertainment and other service activities, market producers		Central government accounts		A	Grants
		Norsk tipping	https://www.norsk-tipping.no/selskapet/english	Q	Quarterly figures for turnover of various types of games
		Norsk rikstoto		Q	Quarterly figures for turnover
		Quarterly labour accounts		Q	
		Consumer price index	http://www.ssb.no/en/kpi	M	
General government	*Local government: Public administration, Education, Human health activities, Social work, Arts, entertainment and recreation*	KOSTRA (Municipality-State-Reporting)	http://www.ssb.no/en/offentlig-sektor/kostra	Q	Quarterly figures are compiled for the QNA by the Division for Public finance. Adjusted to accrual accounting
	Central government: Defence, Public administration, Education, Human health activities, Social work, Arts, entertainment and recreation		http://www.ssb.no/en/offentlig-sektor/statistikker/offinnut/aar/	Q	
NPISH	*Education*	GSI	https://gsi.udir.no/	A	Hours taught and number of pupils. Dispersed on quarters according to school calendar
	Remaining industries: Human health activities, Social work, Arts,	Mix of sources	Central government data, labour accounts	A, Q	

	entertainment and recreation, Other service activities				
Gross fixed capital formation	*General indicator*	Building statistics	http://www.ssb.no/en/bygg-bolig-og-eiendom/statistikker/byggeareal	M	*Asset type Buildings and construction*
	General indicator	The Norwegian Public Roads Administration	http://www.vegvesen.no/en/The+NPRA/About+the+NPRA/Facts/Norwegian+Public+Roads+Administration.56886.cms	M	*Asset type transportation vehicles*
	Agriculture	The Budgeting Committee for Agriculture	http://www.nilf.no/english/Account_statistics_in_agriculture_and_farm_forestry	A	
	Fisheries	External trade in goods	http://www.ssb.no/en/utenriksokonomi/statistikker/muh	M	
	Petroleum activities	Oil and gas activities, investments	http://www.ssb.no/en/energi-og-industri/statistikker/oljeinv	Q	
	Manufacturing and electricity supply	Investments in manufacturing, mining and quarrying and electricity supply	http://www.ssb.no/en/energi-og-industri/statistikker/kis	Q	
	Wholesale and retail trade	Retail sales, investment statistics	http://www.ssb.no/en/varehandel-og-tjenesteyting/statistikker/detinv	Q	
	General government	See general government		Q	
Household final consumption expenditure	*Consumption of goods*	Index of retail sales	http://www.ssb.no/en/varehandel-og-tjenesteyting/statistikker/doi	M	
	Consumption of goods	Index of household consumption of goods	http://www.ssb.no/en/varehandel-og-tjenesteyting/statistikker/vki	M	
	Consumption of goods	Consumer price index	http://www.ssb.no/en/priser-og-prisindekser/statistikker/kpi	M	
	Consumption of goods	The Norwegian Brewer- and Beverage Association	http://www.drikkeglede.no/tall_og_fakta/	M	Figures for mineral waters and beer
	Consumption of goods	Electricity consumption	http://www.ssb.no/en/energi-og-industri/statistikker/elektrisitet	M	
	Consumption of goods	Initial registration of cars	http://www.ofv.no/	M	

	Consumption of goods	Sale of petroleum products	http://www.ssb.no/en/energi-og-industri/statistikker/petroleumsalg	M	
	Consumption of goods	Tobacco and chewing tobacco	http://www.ssb.no/en/utenriksokonomi/statistikker/uhvp	M	Imports, which are smoothed by a simple moving average of y/y growth (new indicator)
	Consumption of services	Other service activities, turnover	http://www.ssb.no/en/varehandel-og-tjenesteyting/statistikker/tjenester	Bi-M	Consumption groups *Services incidental to clothing and footwear*, parts of *Kindergartens and other personal services(+fees)*and parts of consumption group *Repair of personal and household goods*
	Consumption of services	Output in corresponding industries		Q	Consumption groups *Paid and imputed rent (+fees), Services incidental to dwellings(+fees)*, parts of *Repair of personal and household goods, Human health services(+fees), Passenger transport*, parts of consumption group *Repair of motor vehicles, parking etc.* (fees), *Postal and courier consumption*, parts of *Leisure service consumption(+fees), Education(+fees)*, and *Accommodation and food service consumption(+fees), Banking services, legal and business activities consumption (+fees)*, parts of *Kindergartens and other personal services(+fees)*
Employment and population	*Employment*	Sickness absence	http://www.ssb.no/en/arbeid-og-lonn/statistikker/ sykefratot/kvartal	Q	
	Employment	Employment, register based (RES)	http://www.ssb.no/en/arbeid-og-lonn/statistikker/regsys	Q	
	Employment	Labour force survey (LFS)	http://www.ssb.no/en/arbeid-og-lonn/statistikker/aku	Q	

	Wages and salaries per full time equivalent	Wage index	http://www.ssb.no/en/arbeid-og-lonn/statistikker/lonnkvart	Q	
	Employment	Employment among short-term immigrants	http://www.ssb.no/en/arbeid-og-lonn/statistikker/kortsys	Q	
	Compensation of employees, general government	See general government		Q	
Import/Export	*External trade in goods*	External trade in goods	http://www.ssb.no/en/utenriksokonomi/statistikker/muh	M	
	External trade in services	External trade in services	http://www.ssb.no/en/utenriksokonomi/statistikker/uhtjenester	Q	
	External trade in goods	External trade in goods, indices of volume and price	http://www.ssb.no/en/utenriksokonomi/statistikker/uhvp	Q	

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